DEVELOPMENT
OF
DIFFERENTIAL PERSONALITY SCALE
IN HINDI

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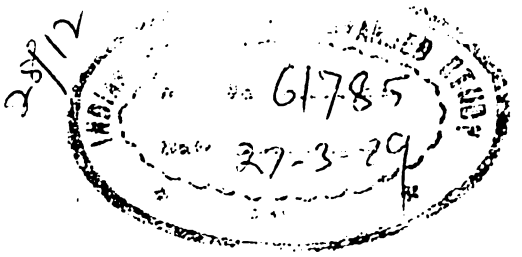

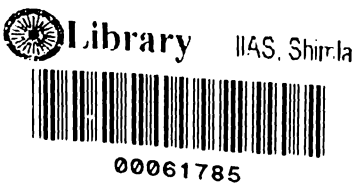

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Preface

Perhaps a justfication in a few words is necessary for writing a book in the area of measurement of traits of personality. After making a careful review of Indian literature in particular, it became obvious that investigators have been able to contribute much in the domain of personality but their contributions are mainly concentrated either in the area of measurement of adjustment or in the area of correlational studies with some personality variables. A few attempts have only been made to contribute in the area of measurement of personality traits or dimensions. DEVELOPMENT OF DIFFERENTIAL PERSONALITY SCALE is a unique addition to this area. I call it unique because it is solely devoted to the measurement of social traits of human personality. The book has been written in seven chapters and covers all the requisite steps of construction of a personality test.

I express my deepest sense of gratitude to Dr. L.N.K. Sinha. Professor of Psychology at the Institute of Criminology and Forensic Science, New Delhi for giving valuable suggestions and guidance in writing this book. I am also thankful to Dr. B. De, University Professor, Director and Head of the Department of Psychology, Patna University, for extending cooperation whenever necessary. I am indebted to Mrs. J. P. Matlak, Division of Psychological Studies, Educational Testing Service, Princeton, New Jersey, U.S.A. for sending recent reports in the area of Psychometrics along with "Summary of Research Projects", 1969-70, 1971-72, 1972-73, and 1974-75. In general, my primary debt is also to those psychologists whose researches have been used.

I express my sincere obligations to Dr. Bachchan Deo Kumar Singh, University Professor and Head of the Department of Hindi, Ranchi University, Dr. Ram Tawkya Sharma, Department of Hindi, Patna College, Prof. A. Das Gupta, Department of English, Patna College, Prof. B.P. Singh, Department of English, Patna College from whose suggestions, criticisms and comments I profited most. At this juncture I shall not fail to mention the name of my beloved teacher Prof. T. Nath who as a Head of the Department of Psychology of Patna College, unhesitatingly spared a few important classes for the collection of data essential for writing this book.

I am also indebted to University Grants Commission, New Delhi for awarding Junior Research Fellowship which provided a constant financial support to this work. Sincere thanks are due to the Librarian, Patna University who displayed keen interest by providing constant help to this work.

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Finally, I must thank Smt. Kumud Rani, my wife; Archana, Arpana, Alpana, my daughters; and Tunni, my son, who bravely suffered the neglect and torment while I was busy with preparation of manuscript for this book.

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Introduction

A hundred years ago Thomas Carlyle had this to say: "Today is not yesterday; we ourselves change; how can our works and thoughts, if they are always to be the fittest, continue always the same?" If our personality is such that it is always growing and changing, the question arises can we not study or measure it ? Psychologists have taken pains to study personality rather closely and to develop various tools and techniques for measuring it. This attempt may be dated back to 1880 when Francis Galton developed a personality questionnaire for studying mental imagery. Thus the first personality questionnaire was developed in an attempt to study the inner world of perception and feeling (Cronbach, 1970, p. 520). Besides personality questionnaire, other important tools invariably employed by psychologists are rating scales, projective tests and sociometric methods (Hilgard, 1957, p.477; Geldard, 1962, p. 333-38). These tools enable them to draw inferences regarding the different aspects or dimensions of personality. The aspects or dimensions are also referred to as 'traits' (Hilgard, 1957, p. 477).

Meeting people—strangers and familiars—is a common event of our daily life. Knowing and understanding people facilitate better adjustment. This is only possible through evaluation of the dynamics of others' personality. This process starts right from the early childhood. Our babies watch the behaviour of adults in the family minutely and intently and incorporate whatever they find in it rewarding and satisfying. A workable understanding of others' personality is helpful in

various other ways. For example, marriage is one of the important aspects of life. The success of marriage not only depends upon the healthy personalities of spouses but also on the extent to which they understand each others' problems, interests, likes and dislikes, etcetera or by and large their personality. In occupation as well, one needs to understand and assess personality pattern which is conducive to better adjustment with the job, co-workers and authorities. A particular personality pattern may help in attaining success in an occupation and empirically provides an important cue as to a wise choice of occupation. Obviously, a scientific study of personality thus permits a better understanding of the persons which has been an age old curiosity of philosophers, astrologers and soothe-sayers. Nunnally (1959) has rightly opined that personality complexes, as such, are highly involved in happiness and success in personal, social and vocational life of the individual. Consequently, urgent need to develop adequate measures of personality cannot be undermined.

The scientific uses of personality measures are numerous, that is, the counsellor, the case-worker and the psychiatrist all employ tests of personality for one or the other purposes. In clinical examination of a patient an attempt is made to probe into the deeper dynamics of personality so as to explore the roots for conflicts, anxieties and other complexes. The primary objective of the measurement of personality is to understand, describe, predict and control the human behaviour. As Cattell (1950, p. 2-3) has also opined, "...Personality is that which permits a prediction of what a person will do in a given situation. The goal of psychological research in personality is thus to establish laws about what different people will do in all kinds of social and general environmental situations ... Personality is concerned with all the behaviour of the individual both overt and under the skin."

Human behaviour can be classified into three categories: individual behaviour, group behaviour and interaction between individual and group behaviour. Any assessment of personality aims at understanding each of these categories of behaviour (Ferguson, 1952, p.1). Psychologists have insisted

on showing empirically as to how measurement of personality is helpful in describing, predicting and controlling the behaviour in various spheres of life such as in marital happiness (Terman, 1938), in vocational success (Kurtz, 1941), in mental adjustment (Fransworth and Ferguson, 1938) and in early diagnosis of incipient criminal tendency (Merrill, 1947).

Personality measurement not only aims at understanding behaviour as related to individual idiosyncrasies but also at an understanding of group behaviour as a whole. The group behaviour can be better understood if we are able to make a scientific assessment of the personality characteristics of the individuals who comprise it. One of the very interesting and frequently cited examples is that of Bridges (1929) who describes how his father, William Bridges, set out to convert the Indians of Tierra del Fugeo to the different ways of the civilisation of Europe. Other examples are also available showing the instances of one nationality group trying to influence the personality of other nationality group. Leighton (1949), for example, in his analysis of the works and the results of Foreign Morale Analysis Division made a detailed analysis of morale of the Japanese and recommended the ways in which Japanese morale could be adversely affected and Allies' morale could be affected favourably.

Explorations into the impact of the group upon individual personality are not lacking (Nadel, 1937; Bleuler and Bleuler, 1935; Cook, 1942; Kinsey, Pomeroy and Martin, 1948). Likewise, we know the important personality of several national and international leaders who by virtue of their talent and ability have been instrumental in bringing about social changes thus providing the examples of the impact of personality upon group.

Finally, it can be said that a threadbare analysis of the personality conglomeration and the ways in which it has permeated into the fabrics of human life can be summarized as follows : (i) Study into the individual idiosyncrasies; (ii) Understanding into group idiosyncrasies; and (iii) the interactional process between the former and the latter.

Although 'personality' has been one of the earliest areas of interest for psychologists, yet there is no unanimity regarding its meaning. Generally, psychologists have defined the term so that it fits with their approach and since there are many approaches, there are many meanings or definitions. There are some fifty different current meanings of the term 'personality' (Allport, 1937; English and English, 1958). For the present purpose the term personality may, however, be understood as something which includes the whole person all kinds of his diverse abilities, tendencies, and other innate or acquired dispositions or characteristics which are organized and consistent with his day-to-day activities and distinguishes him from others present in the environment.

One general conclusion drawn out of the host of definitions propounded by different psychologists is that personality basically implies organisation or integration of physical and psychological concomitants. It is not a random collection of dispositions or traits; rather these traits are orderly and integrated (Geldard, 1963, p. 330). Various approaches have been advanced to explain the nature of personality organisation or personality structure which refers to the uniqueness features that constitute personality and render it understandable (Hilgard, 1957, p. 495). Historically and empirically, the viewpoints can be categorized as typological approach, trait approach and factor-analytic approach.

Typological approach

Typological approach to the understanding of personality organization is rather an old one. In the words of Eysenck (1947) a type may be defined as "an observed constellation or syndrome of traits". This type is a broad generalized variety of organisation which includes the traits as component parts. The approach attempts to describe the structure of personality by sorting individuals into different categories or types. Usually the sorting is done on the basis of two types of characteristics—bodily characteristics and psychological characteristics.

Shuey (1937) revealed that most of the type ideas which have got a place in psychology have not come from academic

psychologists but from others. One of the earliest attempts to classify personality on the basis of physiological theories was made by medical men like Hippocrates and Galen. These persons attempted to connect temperamental types with an excess of one of the four basic fluids or humors—yellow bile, black bile phelgm and blood. An excess of yellow bile produced choleric temperament (hot-tempered and irascible). The profusion of black bile produced melancholic temperament (sad, depressed and gloomy). Sanguine temperament (hopeful and cheerful) owed its origin to the excess of blood and phelegmatic temperament (sluggish and apathetic) came from phelgm.

In the modern scientific era this primitive physiological type theory of Hipporcates and Galen enjoys only historical significance. Therefore, many other investigators have advanced different physiological or body type theories. Krestchmer (1925), a German psychiatrist. has proposed a widely investigated body type theory. The physical typology of Krestchmer came as a part of his study of two mental disorders—Schizophrenia and Manic-depressive psychosis. On the basis of observations of the patients of these disorders, he came to the conclusion that there are two main types of body structure—the short and plump and the tall and thin, each connected with a characteristic temperament pattern of its own. The short and plum were characterized by cycloid tendency (sociable, good-natured, humorous etcetera) and the tall and thin were characterized by schizoid tendency (reserved, unsociable, quiet, etcetera). Studies of psychotics by many investigators have upheld the Krestchmer's body type theory, but studies conducted those on normal individuals have failed to provide support for his theory (Stagner, 1961, p. 274).

Another body type theory which has been more provocative, and hence thoroughly investigated, is that of Sheldon, Stevens and Tucher (1940), Sheldon and Stevens (1942) and Sheldon (1954). Sheldon's theory, popularly known as somatotype theory, holds that there are three body types (Somatotypes), namely, Endomorph characterized by fat and softness; Mesomorph characterized by muscular and atheletic; and Ectomorph characterized by tall, thin, stoop-shouldered and fragile. Corre-

sponding to each of those body types there are three temperamental components. Endomorph is characterized viscerotonic temperament (sociable, jolly, showing proper love and affection); Mesomorph is characterized by somatotonic temperament (energetic, selfassertive) and Ectomorph is characterised by cerebrotonic temperament (worrying, shy, shrinking from social contacts). Sheldon reported a very high correlation, ranging from. 79 to .83. between somatotypes and temperamental component (cf. Stagner, 1961, p.275).

Investigators have attempted to verify whether Sheldon's theory stands the test of impartial investigation. In one of the recent studies of 10, 000 male subjects, the relationship described by Sheldon between somatotype and temperament was reported to be either absent or negligible (Hood, 1963). Tyler (1956) also failed to find a high correlation between somatotype and temperament. A close scrutiny of Sheldon's correlational reports by statistical experts has revealed many computational errors and fantastic correlations which are mathematically impossible (Lubin 1950). Several other investigators (Fiske, 1944; Smith, 1949; Janofff Beck and Child, 1950; Adcock, 1950) have found statistically insignificant correlations between temperament traits and morphological components described by Sheldon.

Psychologists have also discovered different types of personality based not on bodily characteristics but on psychological characteristics (James, 1890; Rosanoff, 1920; Jung, 1923; Spranger, 1928; Freud, 1932: Eysenck, 1947). Some of these classifications have proved very useful in research conducted during recent years (Eysenck,1954). Of these various classifications the most popular is that of Jung who broadly classified personality into two types—extrovert and introvert. Characteristics of extroverts are sociable, glad-handed and outgoing and characteristics of introverts are shyness inclined towards solitude and easily worried. Jungian cocept of extroversion and introversion has proved valuable in the study of personality and has revealed several interesting things. Guilford (1940), for example, analyzed the test of introversion-extroversion by employing factor-analytic technique. He found five different factors, such as social

introversion thinking introversion, depression, tendency to mood swings and happy-go-lucky dispositions subsumed under it.

Another popular typology is that of Spranger (1928) who divided people, according to dominant value profiles, into six types: the theoretic, the economic, the aesthetic, the social, the political and the religious. Based on this typology, Allport, Vernon and Lindzey (1951) developed a test to measure the individual's value.

Objections to the type theory are that it describes the individual too much with too little of information. Once person is tagged to a particular type, many assertions are made about him. But there are so many other determiners of personality which may make such assertions wrong. There is also a vague feeling that typological approach tends to hold to outmoded conceptions of personality specially neglecting the cultural influences (Hilgard, 1957, p.488). According to Edwards (1968, p.273) this approach though provides a serviceable classificatory system for persons is not competent to make one understand the complexity of personality. In spite of these objections typological approach is useful and because it provides a good reference point for the psychologist trying to understand personality organisation of the individual under investigation (Stagner,1961, p. 285).

Trait approach

Trait approach to the study of personality structure is the opposite extreme of the type approach. According to Eysenck (1947) trait is "an observed constellation of individual action tendencies". Thus, trait is nothing but observed consistency of behaviour of a person (Cattell, 1950; Guilford, 1959; Boring, Langfeld and Weld, 1948; Stagner, 1961; Edwards, 1968; Allport, 1965) Traits are not directly observed but rather inferred from consistent behaviour of the individual. General cues to the traits are what the person does, how he does it and how well he does it (Guilford, 1954, p. 54). By the given trait or traits we are able to distinguish one person from other persons (Smith, 1961, p. 30). According to trait approach personality is studied by its location or position on a number

of scales, each of which is representing a trait. Besides giving a more accurate picture of the personality, trait approach has many advantages. Smith (1961, p. 30) opines:

"As a scheme for studying personality a trait approach has many advantages : it is so simple that it is an inevitable starting place, even for more complicated approaches; it provides a very helpful way of organising much of what we know about personality; and it lends itself readily to experimentation".

Allport (1965) tried to draw a line of distinction between two kinds of traits, namely, individual trait and common trait. Individual trait which is also called as personal disposition by Allport, is unique to the person concerned. It is not found in many persons of the given culture. Allport (1965, p. 373) defines it as "a generalized neuropsychic structure (peculiar to the individual) with the capacity to render many stimuli functionally equivalent, and to initiate and guide consistent (equivalent) forms of adaptive and stylistic behaviour". Examples of individual traits, according to Allport, are quixotic, chauvinistic, puckish, quisling, etcetera. Common trait is just opposite of individual trait. It is the trait which is shared by many persons of the given culture and hence different people of that culture can be easily compared with respect to that trait. Allport (1965, p. 349) defines it as "any generalized disposition in respect to which people can be profitably compared." A few examples of common traits, according to Allport, are neuroticism, authoritarianism manifest anxiety, need for achievement, masculinity or feminity, conformity, etcetera.

Based upon the theory of common traits, psychologists have devised a number of tools to assess the personality of an individual. This is partly because it is easier to develop tools for assessing common trait as compared to individual trait and partly because it is the common trait only with respect to which scientific comparison of people is possible.

According to Allport (1965) there are also cardinal traits, central traits and secondary traits. Cardinal traits are those

which are so pervasive in our personality that few of the activities connot be traced to them. Such traits are usually uncommon and are not to be found everyday. Central traits are the popular traits of pesonality and represent the habits that are characteristic of the individual and are often expressed and quite visible. Secondary traits are those that are less crucial, more limited in their occurrence and closely tied to specific situations.

Cattell (1945) divides traits into two parts: surface traits and source traits. Surface traits are those which frequently appear in interpersonal contacts and are readily observable. They are easily susceptible to modifications under environmental pressures. A few examples of surface traits are liveliness, cheerfulness, etcetera. These surface traits have been presented with some well indentifying indices by Cattell (1946). Source traits are not directly observable and are the underlying structures of the personality. They are often expressed through the medium of surface traits. A few example of source traits are dominance, ego-strength, cyclothymia, etcetera According to Cattell, both the source traits and surface traits may be either common or unique to the individual (cf. Hall and Lindzey, 1957, p. 397; Stangner, 1961, p. 163). After statistically analyzing a large number of traits Cattell (1957) reported some major source traits such as dominance versus submissiveness, surgency versus desurgency, intelligence versus mental defect, cyclothymia versus schizothymia, ego-strength versus neuroticism and several others which are vaguely defined.

Cattell (1950) has recognized the impact of hereditary factors, environmental factors or the mixture of the two upon the traits. A trait thus represents the operation of either hereditary factors, environmental factors or a mixture of both. According to him source traits are usually divided into two parts—one showing the impact of environmental conditions and the other showing the impact of heredity or more broadly the constitutional factors. Former is referred to as environmental-mold traits and the latter is known as constitutional traits. Surface traits are not divided into such cotegories and represent the outcome of the mixture of one or more source traits.

According to modality through which traits are expressed, Cattell (cf. Hall and Lindzley, 1957, p. 398) has further divided personality traits into three parts : dynamic traits which are concerned with putting the individual into action for achieving goals; temperamental traits which are largely concerned with constitutional aspect of activities of the person and ability traits which are largely concerned with the effectiveness with which the individual reaches the goal.

Smith (1961, p. 31) has divided personality traits into following seven categories:

(a) Drive traits : a few instances are : emotionality, optimism, and expressiveness.

(b) Perceptual traits : a few instances are : thinking extroversion. speed of closure and flexibility of closure.

(c) Self traits : a few instances are : self-extension, self-confidence, self-insight.

(d) Value traits : a few instances are : economic, religious, scientific, aesthetic and liberal values.

(e) Temperamental traits : a few instances are : emotionality optimism and expressiveness.

(f) Problem-solving traits : a few instances are : ambition, emotional control, orderliness and intelligence.

(g) Human-relations traits : a few instances are : gregariousness, dominance, warmth and conformity.

One of the general advantages of the trait approach over the type approach is that it avoids the extremes of the latter by accepting that a trait is one of the dimensions of personality. Moreover, trait approach is a straightforward one and provides a good starting point for appraisal of personality (Hilgard, 1957, p. 489). Thorndike and Hagen (1955, p. 386) have also argued in the same way, "People can rarely be well described by clear-cut personality types. They are described as showing different traits in varying degrees."

Factor-analytic approach

One of the main difficulties in describing personality with traits is that they are adjectives and far more numerous to be

encompassed through psychometric tests. As Allport and Odbert (1936) have shown that there are about 17,953 trait names, the length of list undoubtedly suggests that some characteristics may by included under more than one name. So, there was a growing need among psychologists to find out a technique through which inter-correlations of traits could be studied and the confusion arising due to assuming two names of the same trait may be over. To fulfil this need attempts have recently been made to study the consistent intercorrelations of traits for the purpose of identifying some basic personality factors through the technique of factor analysis.

The idea of factor analysis was introduced by an English psychologist, Spearman (1904) who is popularly known for his famous work on mental abilities (1927). Later on his technique of factor analysis was modified by Thurstone (1931).

Several psychologists in a bid to isolate some orthogonal factors or traits have made an extensive use of factor analysis in studying personality. Burt (1937, 1939, 1940, 1948), for example, made factor analytic studies of personality and suggested a two-factor scheme of personality. These two independent factors were emotionality and extroversion-introversion. Eysenck (1947) in his first major factor analytic study which was carried out during Second World War years on a group of roughly ten thousand normal and neurotic subjects extracted two fundamental factors: introversion-extroversion and neuroticism. This study had originally started with the study of seven hundred male neurotic soldiers for whom life history information and ratings on 39 items selected from a personal data sheet were made available. Later on these ratings and life history data were subjected to factor analysis which yielded the above two factors or dimensions of personality. Subsequently, Eysenck (1952) conducted a number factor analytic studies employing both normal and mental hospital patients. These studies convinced Eysenck to recognize a new factor called 'psychoticism'. Thus Eysenck's extensive factor analytic studies, on the whole, have led to the

recognition of three primary dimensions of personality (introversion-extroversion, neuroticism and psychoticism).

Based on intercorrelations of four different tests (the Woodworth Personal Data sheets, the Thurstones' Personality Schedule, the Bernreuter Self-sufficiency test, and the Allports' Ascendance-Submission Reaction study) Bernreuter (1935) developed a personality inventory which measures four traits such as neuroticism, self-sufficiency, introversion and dominance. A refactor analysis of these four Bernreuter test scores by Flanagan (1935) demonstrated that there was much overlapping between these traits. For example, the neuroticism and introversion scores correlate .95 with each other. He found that two factors alone can account for all the four traits. Those two factors are self-confidence and sociability.

Darley and McNamara (1941) also made use of factor analysis and developed a scale to measure personality called 'The Minnesota Personality Scale'. Like Bernreuter's inventory this scale was based upon the intercorrelations of three different test scores (the Minnesota scale for the survey of opinions, the Bell adjustment inventory, the Minnesota inventories of social attitudes). The traits measured by the Minnesota Personality Scale are morale, social adjustment, family relations, emotionality and economic conservatism.

On the basis of the factorial research for nearly twenty years Cattell, Saunders and Stice (1950), Cattell and Betoff (1953) and Cattell (1954) have been able to develop many objective personality tests. Of these the most important and popular one is the Sixteen Personality Factor Questionnaire which includes factors like outgoing, intelligent, emotionally stable, assertive, happy-go-lucky, conscientious, venturesome, tender-minded, suspicious, imaginative, shrewd, depressive, liberal, self-sufficient, controlled and tense. Most of these factors were, however, not independent (Singh, 1971). Anastasi (1961, p. 510) opined, "Despite the extensive research conducted by Cattell and his associates over a period of nearly twenty years, the traits proposed by Cattell must be regarded as tentative."

In the effort to arrive at a more objective and systematic classification of personality traits, some investigators have paid special attention to the method of factor analysis. Guilford (1940) found five factors after factor analyzing the tests of introversion—extroversion. These factors are, as previously mentioned, social introversion, thinking introversion, depression, cycloid tendencies and restraint—popularly these factors are known as the Inventory of factors STDCR. Further factorial studies by Guilford and Martin led to the development of two other personality inventories : Guilford-Martin inventory factors GAMIN (1943a) and Guilford-Martin personality inventory (1943b). After combining two highly correlated factors to avoid confusion and redefining the remaining other factors, a single ten factor inventory was developed. This inventory is known as the Guilford-Zimmerman Temperament Survey (1949). The ten traits of the survey are general activity (G), restraint (R), ascendence (A), sociability (S), emotional stability (E), objectivity (O), friendliness (F), thoughtfulness (T), personal relations (P), and masculinity (M). After refactor analyzing the Guilford's Original data, Thurstone (1931) came to the conclusion that seven major factors alone can account for the above ten factors of Guilford and basing on this results he constructed an inventory known as the Thurstone Temperament Schedule (1953) which measures the following traits : active, vigorous, impulsive, dominant, stable, and reflective.

Based upon factor analytic technique Gordon has also developed two personality scales ; The Gordon personal Profile (1954) and the Gordon Personal Inventory (1956). The traits measured by Profile are ascendency, responsibility, emotional stability and sociability and the traits measured by inventory are cautiousness, original thinking, personal relations and vigor.

Besides the above, a number of investigators (Willoughby, 1932; Reyburn and Taylor, 1934; Perry 1934; Moiser, 1937; Vernon 1938, Brodgen and Thomas, 1943; Gibb, 1942; Lovell, 1945; North, 1949; Jenkins, 1950; Hildebrand, 1958) have made factor analytic studies of different traits of personality

and arrived at different conclusion. Differences in the conclusion can obviously be traced back to their different aims and objectives in the study of personality. As for example, Guilford, Thurstone, Cattell, etcetera., have aimed at showing the diversity of human traits whereas Eysenck has tried to simplify the picture by showing that there are only two to three primary traits.

General Nature of Personality Scales and their Critique

One of the convenient techniques of assessing personality is through the inventory or the self-report questionnaire. The first personality inventory that earned prominence was the Woodworth's Personal Data Sheet (1918). The inventory was developed during world war I for screening out those who were mentally unfit for overseas services (Zubin, 1948). Since the appearance of Personal Data Sheet a large number of personality inventories have taken shape. Perhaps their number is in some thousands (Nunnally, 1959, p.322). In view of its large number it is only possible to discuss their general nature and coverage. Some personality inventories aim at measuring single trait while others aim at measuring several traits. The first set of inventories is known as unidimensional or single-trait scale and the second set is known as multidimensional scale (Ferguson, 1952).

Besides Woodworth's Personal Data Sheet, some of the important unidimensional scales which have been extensively used in research, selection, and clinical purposes are the Allports' Ascendence-Submission (A-S) Reaction Study purported to measure tendency to dominate one's friends or associates or be dominated by them in a face-to-face contacts of life (1939); the Maslow's Test for Dominance-feeling (1940) and the Personality Scale for Dominance by Gough, Mc-Closky and Meehl (1951) both purported to measure a tendency to dominate one's peers; the Freyd-Heidbreder Test for Extroversion-Introversion (1926) and the Inventory of factors STDCR by Guilford (1940) both designed to measure traits of extroversion-introversion; the F-scale developed by Adorno, Frenker-Brunswik, Lerinson and

Sanford (1950) purported to measure authoritarianism and the Thurstones' Personality Schedule (1930) designed to detect persons who needed psychiatric attention. The primary merit of these unidimensional scales is the clear understanding of just what it is that the test measures (Ferguson, 1952,p. 422). In spite of this, today there is a general inclination towards the development and adaptation of multidimensional scales. Recently, as also in the past, several fruitful attempts have been made in this direction. Some of the popular multidimensional scales developed on the basis of factor analysis are the Guilford-Zimmerman Temperament Survey (1949), the Thurstone Temperament Schedule (1953), the Bernreuter Personality Inventory (1935), the Minnesota Personality Scale (1941), the Cattell Sixteen Personality Factor questionnaire (1950), the Gordon Personal Profile (1954), the Gordon Personal Inventory (1956), etcetera. Besides these, other important multidimensional scales are the Minnesota Multiphasic Personality Inventory (MMPI) developed by Hathway and McKinely to measure personality traits which have got pathological flavour (1951); the California Psychological Inventory (CPI) developed by Gough to measure 18 normal traits of personality (1957), and the Bell's Adjustment Inventory purported to measure four areas of home adjustment, social adjustment, health adjustment, emotional adjustment plus a score for total adjustment (1934, 1938). Multidimensional scales, for many reasons, are considered as better measures of personality than those of unidimensional scales. One of the obvious advantages of the former over the latter is that it covers wider aspects of personality. The economy is the other important factor to be considered in the side of its advantages (Ferguson, 1952 p. 424).

In developing objective type personality inventories mainly three techniques have been extensively followed: technique of criterion groups, technique of construct approach and technique of factor analysis (Bass and Berg, 1959, p. 101). Technique of criterion group requires two contrasting group of subjects. For example, one group may consist of persons labelled as paranoids, while the other group may consist of persons without any such labelling. These two contrasting groups of

subjects are then given a set of items and the differences in responses of the two groups with respect to each item are examined. A statistical test is subsequently applied to select the items which differentiate clearly one group from the other. The Minnesota Multiphasic personality Inventory constructed by Hathway and McKinely (1951) and the Vocational Interest Blank constructed by Strong (1938) have been developed on these lines.

In technique of construct approach investigator starts with the personality variables or constructs that are of interest to him (Bass and Berg, 1959, p. 104). A large number of items are constructed relating to each variable. Responses of the unselected group of subjects are secured and items are analyzed. Usually some correlational techniques are applied to select items for final inclusion or the total scores for the subjects are obtained on the whole set of items and the individual items are, then, analyzed in terms of total scores. Allport, Vernon, and Lindzey (1951) in constructing a test for individual's value and Edwards (1953) in constructing the Personal Preference Schedule have followed this technique.

In technique of factor analysis the investigator usually starts with a large pool of items. Responses of the subjects are obtained to these items and they are intercorrelated to constitute a factor. Items showing high intercorrelations are said to constitute a factor. Items having high loadings on a particular factor and low loadings on the remaining other factors are placed together. An attempt is made to see what is common between the factor and the item having high loadings on that factor. The items having a 'Commonality' constitute a scale for that personality variable. Inventories based upon factor analytic technique are numerous and a brief discussion has already been done.

Irrespective of the techniques used in development of personality inventories, there are certain common and basic problems relating to these inventories. One of these relates to changes in response of the subjects from time to time. Some subjects do change their response in retesting situation. Such responses show a lack of dependability in subjects'

answers and weakens the dependability or stability (technically called test-retest reliability) of the inventory (Guilford, 1959, p. 192-93; Anastasi, 1961, p. 519). Benton and Stone (1937) conducted a study to find out the extent to which responses are changed by the subjects in retesting. They administered an inventory to a group of subjects, then readministered to the same group immediately and again readministered after the interval of 21 days. Eight per cent changes in responses were found in immediate retesting and twenty per cent changes were reported after 21 days. Fransworth (1938) also studied changes in responses involving much longer intervals and reported twenty nine per cent changes occurred after a year and the same twentyfive per cent even after three years. Landis and Katz (1934) studied changes by a simple comparison of responses taken in two different situations. First, responses were taken on an inventory and then, it was compared with the responses of the same persons taken orally in an interview. Responses were changed to the extent of twenty seven per cent. Similar results weye reported by Eisenberg and Wesman (1941). Other problems of inventories relate to different interpretation of the same item by different subjects. Such misinterpretation of items considerably lowers the dependabilty of the inventory. In order to avoid such misinterpretation, the items should be carefully edited. According to Willoughby and Morse (1936) no amount of editing can, however, fully ensure that the meaning of an item is same for all subjects. Guilford (1959, p.193) opines : "Misinterpretation of items, some items, at least, cannot be avoided however well the test is written. The test writer does the best he can. Apparently nonfunctioning items are eliminated consequent to item analysis. There still remain some items that can be misiterpreted by someone." Subjects are also found showing wilful biasing of the responses in a personality inventory. For example, subjects may conceal the true responses and give them a socially acceptable or desirable form. This tendency is known as social desirability variable and researches have been done to show that variable lessens the usefulness and validity of the inventory (Kimber, 1947; Guilford and Lacey,

1947, Smith, 1961; Dunnette, McCartney, Carlson and Krichner, 1962; Edwards, 1955; Crowne and Marlowe, 1964).

In spite of these limitations inventory has been one of the popular tools of personality measurement. Its popularity is easily assessed by day-to-day increasing numbers and frequent applications in research, selection and clinical purposes. Where it is important to understand the persons in terms of trait concepts, personality inventories have still much to offer.

Purpose of the Study

Like any other science, measurement is necessary for psychology. Psychologists are frequently faced with the problem of measuring skills, abilities, attitudes, opinions and other aspects of human personality. Construction of scientific tools is essentially needed for measuring various contours of personality. Keeping this in view, psychologists of U.S.A. and U.K. as also of India have devoted much time and energy to the construction and standardization of psychological tests for assessing different aspects of personality.

Many psychologists in India have not taken pains to construct original test rather they have preferred to take a foreign-made test and adapt it in any of the Indian languages to suit their requirement and convenience. As for example, Hussain (1968) adapted the Bell's Adjustment Inventory in Hindi. The inventory covers four areas such as home adjustment, health adjustment, social adjustment and emotional adjustment and is meant for college students. The Bell's Adjustment Inventory has also been adapted by Abraham and George (1966) as well as Tewari and Tewari (1968). Jamuar and Singh (1973) adapted the Maslow's Security-Insecurity Inventory in Hindi. Percentile Norms were developed separately for male and female students of class IX through degree part II. The Maudsley Personality Inventory was adapted in Hindi by Singh (1971). The inventory measures neuroticism and extraversion among college students. Other popular Indian adaptations have been of the Adorno's F. scale, the Berarouter's Personality Inventory, the Eysenck

Personality Inventory, the Junior Personality Inventory, the Allport's A-S Reaction Study, the Guilford-Zimmerman Temperament Survey, and the Apperception Tests (Pareek and Rao, 1974. pp. 3-4).

Some psychologists have, however, preferred to develop original personality inventory. Asthana (1955), for example, has developed an Adjustment Inventory which measures adjustment of persons between the age group of 14 to 18 years. Qadri (undated) developed Aligarh Adjustment Inventory which consists of 90 items and covers such dimensions of adjustment as social, emotional, family, health, and financial. Each area contains 20 items except the financial one which contains 10 items only. Bengalee (1965) has also developed an inventory for adjustment, known as Youth adjustment Analyzer (YAA). It covers five areas of personal and social adjustment of persons of 16 years and above. Singh (1967) developed Adjustment Inventory for college students which measures adjustment in five different areas such as home, health, social, emotional and educational. The inventory has a total of 166 items. Agarwal (1970) constructed an inventory for measuring adjustment of college students in personal, home, social and health areas. Pareek, Rao, Ramalingam and Sharma (1970) developed a battery of personality tests which measures adjustment, dependency, trust, initiative, and activity level among preadolescents. In construction of adjustment and dependency inventories Thurstone's method of equal-appearing intervals was followed. Prasad (1974) developed Adjustment, Inventory for teenagers which measures parental adjustment, home and family adjusment, social adjustment, emotional adjustment, and self-acceptance. The inventory has a total of 279 items and norms for different sections of population are given.

Attempts have also been made to develop personality inventories which assess the traits of personality and not the adjustment. Some of these inventories exclusively cover a single or a few selected dimensions like introversion, neuroticism, extroversion, etcetera. Kundu's Neurotic Personality Inventory (1964) is a good example. The inventory has a total

of 66 items with 5-point forced-choice response options. Inventories measuring traits with pathological flavour are also not lacking. Schirophrenic Scale (Murthy, 1964), Paranoid Scale, Depressive Scale, Manic Scale and Depressive Anxiety Scale (Murthy, 1965) are good examples. Some inventories are multidimensional covering more then one or two selected dimensions A popular example of such an inventory is Primary Schools Pupils Personality Traits Rating Scale developed by Ramji, Gupta and Rastogi (1970). The scale intends to assess 10 traits of school pupils (age 6-11 years) through ratings by their teachers. The traits are regularity, co-operation cleanliness, punctuality, leadership, obedience, helpfulness, honesty, self-confidence and curiosity.

Keeping in view the various personality inventories developed in India, it is clear that there has been paucity of inventories or scales which might cover a number of traits as are to be found in the Guilford-Zimmerman Temperament Survey, the Cattell Sixteen Personality Factors and the like. There are a number of personality traits, for example, responsibility, decisiveness, friendliness, emotional stability, ego-strength, dominance, heterosexuality, etcetera, which are socially as well as clinically very meaningful and significant. As such, it was proposed to construct 'Differential Personality Scale 'in Hindi and standardize it on a suitable sample, which may include some of the socially significant personality traits.

Method of Study

Selection of Personality Dimensions

As the present research was undertaken to construct a scale measuring traits or dimensions of personality, it was necessary to make a scientific selection of those dimensions. Accordingly, twenty socially relevant and meaningful dimensions of personality, namely, decisiveness, self-sufficiency, responsibility sociability, emotional stability, restraint, objectivity, heterosexuality, thoughtfulness, masculinity, ego-strength, cautiousness, depressiveness, curiosity, impulsiveness, tender-mindedness, dominance, friendliness, suspiciousness and ascendency were selected and defined. These dimensions were given to a group of 15 experts (all teachers of psychology) with a request to select the dimensions which they consider socially significant. The total number of dimensions over which the experts were unanimous, was nine and these were retained for final inclusion in the scale. These nine dimensions were (i) decisiveness (ii) responsibility (iii) emotional stability (iv) masculinity (v) friendliness (vi) heterosexuality (vii) ego-strength (viii) curiosity and (ix) dom'nance. Each of these dimensions was operationally defined as under:

(i) *Decisiveness:*

(a) To take quick decision in controversial matters.
(b) To decide easily which of the activities should be taken up first.
(c) To undertake a journey after quick decision.

(d) To take a clear cut stand over the given issues.
(e) To remain firm over the decisions and stick to them.
(f) To decide priorities and accordingly attend to them.
(g) To resolve a conflict by much of pondering.
(h) To take political, social, religious and other decisions independently.

(ii) *Responsibility:*

(a) To finish a task in time.
(b) To keep careful watch on what is right or wrong while interacting with others.
(c) To meet people on appointed time.
(d) Te be in time in following a schedule.
(e) To dress well before going to a public place.
(f) To act well as a head or to hold a key position in an institution.
(g) To accept the work of supplying meals, providing lodging, etcetera to the large gatherings of people.
(h) To pay due attention to one's commitments and to execute them in time.

(iii) *Emotional stability* :

(a) To have control over one's emotions.
(b) To reply boldly the questions put in a group or in an interview.
(c) To consider ailments in their proper perspective.
(d) To talk confidently with others.
(e) Freedom from common phobic reactions.
(f) To face personal comments and criticisms realistically.
(g) Freedom from doubts over others' actions or reactions.
(h) To have the correct account of one's merits and demerits.

(iv) *Masculinity:*

(a) To undertake a journey frequently on foot, by horse, elephant, or motor cycle.
(b) To accept the challenges from others and face them boldly.

(c) To accept a job in police or military.
(d) To accept a risky and brave role in play or a drama.
(e) To play outdoor games.
(f) To swim or to take a bath in the open.
(g) Not to come to tears easily.
(h) To follow or chase somebody till one is caught.

(v) *Friendliness* :

(a) To develop deeper acquaintance with people.
(b) To meet or to invite people at residence.
(c) To make others realise their mistakes rather than chide them for the same.
(d) To help others in the time of trouble.
(e) To maintain congenial relations even with those who are superficially known.
(f) To talk freely and unhesitatingly with others even on personal maters.
(g) To change easily simple acquaintances into intimate friendship.
(h) To show proper love and affection even to juniors.

(vi) *Heterosexuality* :

(a) To be in love with opposite sex.
(b) To enjoy going outsids with opposite sex.
(c) To read magazines, books, etcetera, which contain matter on sex.
(d) To allow to mix boys and girls freely.
(e) To enjoy taking meal among the members of opposite sex.
(f) To take active participation in a discussion over matters relating to sex.
(g) To cut jokes involving sex.
(h) To take active participation in a cultural programme with the members of opposite sex.

(vii) *Ego-Strength* :

(a) To be able to concentrate and attend to different activities at a time.

(b) To face the odds of life realistically.
(c) To bear frustrations and handle them effectively.
(d) To have the feelings of personal adequacy and vitality.
(e) To be relatively free from dreadful dreams and fantastic ideas.
(f) To have adequate control over impulses.
(g) To be tolerant of individual differences in ideas and ways of doing things.
(h) To have high coordination between thoughts and actions.

(viii) *Curiosity* :

(a) To explore the details of objects or things which are relatively new.
(b) To make enquiries about strangers and sudden arrival of policemen in detail.
(c) To reach the place of destination before time.
(d) To go into the details of construction of some complex machinery or art.
(e) To try to know the contents of talks of others or reactions of others towards oneself.
(f) To enquire people regarding the purpose of the large gatherings of persons.
(g) To rush for reading newspapers, letters or new books on their first arrival.
(h) To try to know about the ends of a play or about the habits and customs of foreigners.

(ix) *Dominance* :

(a) To dictate to others for their duty.
(b) To oppose an opponent severely.
(c) To present arguments in favour of one's view-points.
(d) To undertake the supervision of a difficult and complex task.
(e) To act well as the chief of a Committee or Commission.
(f) To settle controversy between rivals.
(g) To impose one's will over others.
(h) To be the leader of one's group.

These definitions of the nine dimensions of personality were given to 5 experts (all teachers of psychology) for examination in content and format. These experts were almost unanimous regarding the different activities included by the respective personality dimension except for some minor changes here and there.

Item Construction

The success of a psychometric test depends largely upon the construction of effective and objective items of which it is composed (Lindquist, 1951; Anstey, 1966; Adkins, 1947; Travers, 1949; Stuit, 1947). Objective items may be classified into two main categories depending upon the manner in which responses have been sought, namely, the free-response type which includes complete statement or question and incomplete statement or question and the limited-response type which includes alternate-response item, multiple-choice item and matching item (Stanley, 1964, p. 204). For writing effective and objective items the test constructor should have a full length knowledge of the subject-matter, should keep in view the types of the individual for whom the test is intended and should show a flash of imagination and ingenuity in carving out the contour of the situations.

It was decided to write 5 items on each of 8 activities covered by a personality dimension. In this way the total number of items written in any one dimension was 40. In order to reduce overlapping among items it was decided to write items dimension wise. For eliminating the semantic style variance the terms like 'often', 'usually' and 'sometimes' were avoided (Strahan and Gerbasi, 1973). In this way an initial pool of 360 items was ready for the entire scale. In order to ensure that the items of the scale were intelligible and explicit, they were written in such a way that they could be comprehended by individuals having even moderate knowledge of Hindi language. Similar words or sentences from one item to another were avoided. It was also kept in view that the scale may not be a lengthy one and that it takes only a reasonable time in its completion. Responses on the items were elicited in terms

of 'True' and 'False' (Jackson, Neill, and Bevan, 1973). Negative items were also written for counterbalancing the response set like acquiesense or the tendency to answer 'True' or 'Yes' (Anastasi, 1968, p. 450). The entire set of 360 items was given to 5 language experts and 5 subject experts who suggested a few minor changes here and there. Accordingly, the contents of the items were modified.

An initial tryout of the scale was done on a group of 24 subjects (12 males 12 females) who were students of I.A., B.A. and M.A. classes. The Scale was administered in individual session. Subjects were encouraged to pointout the vagueness, if any, in the items. Such items which were vague were either dropped or suitably modified in the light of suggestions of most of the subjects. After this initial tryout, the remaining 310 items were found distributed in different dimensions as shown in Table 5.1.

TABLE 5.1

Distribution of items among different dimensions after initial try out.

Dimension	Total items written	Number of items retained	Number of items dropped
Decisiveness	40	35	5
Responsibility	40	33	7
Emotional Stability	40	34	6
Masculinity	40	35	5
Friendliness	40	35	5
Heterosexuality	40	34	6
Ego-strength	40	34	6
Curiosity	40	35	5
Dominance	40	35	5

Social Desirability Variable

Since the personality inventory became popular, a new source of response bias has been frequently recognised and identified by the terms like 'faking-good' or 'social desirability tendency' (Guilford, 1954). The tendency refers to the inherent tendency of an individual to conform to the norms of the society (Edwards, 1970). While responding to a personality inventory, people try to conform to the social norms and accordingly, give responses which are considered to be socially desirable ones. A high social desirability score is indicative of the strong need for approval (Crowne and Marlowe, 1960; Cronbach, 1970) Probability of high susceptibility to this social desirability has also been found to be positively related with embarrassing parental practices (Allaman, Carol and Crandall, 1972).

Psychologists, today, unanimously hold that the tendency of the individual to make socially desirable rather than true answers to personality inventories lessens their usefulness (Cronbach, 1950; Edwards and Horst, 1953; Green, 1954; Guilford, 1954; Navran and Stanffacher,1954: Kenny, 1956; Rosen, 1956; Fordyce, 1956; Edwards, 1958; Smith, 1961; Cohen and Lefkowitz, 1974). It is, therefore, essential that some means should be followed to control social desirability response bias. There are ordinarily three approaches to control the social desirability in a personality inventory (Edwards, 1567, p. 59). One way to control social desirability tendency is to arrange the items inventory in such a way that the subject is forced to choose between two equally desirable answers (Edwards, 1953). But forced choice technique has its disadvantages because it seems to create more problems than it solves (Levonian, Comrey, Levy, and Proctor, 1959)· Another way, as suggested by Meehl and Hathaway (1946), is to use an independent SD (Social Desirability scale and scores on this scale may be correlated with scores on other inventories to give an index for this tendency. A third approach, as suggested by Wiener (1948) and Hanley (1956) is to have items in inventory which are relatively neutral type with respect to social desirability.

In the present context only such items which were deemed relatively neutral with regard to social desirability tendency

were included. In order to achieve this the items were passed on to 15 experts (all teachers of Psychology) with a request to rate each item on a 9-point rating scale ranging from 'extremely desirable' through 'neutral' to 'extremely undesirable (Edwards, 1957, p. 4). A modified version of Edwards' instruction given to judges is as under :

"In this test booklet you find a number of statements regarding people's likings, dislikings, character, ways of thinking and doing task. Please read each statement carefully and rate them on the given scale as to how socially desirable or undesirable they are if applied to other people. You are not interested in knowing whether the statement applies or does not apply to you. You are to rate the items using the following rating scale by writing the rating value in front of each item

RATINGS TABLE

Ratings	Meaning of Ratings
1	Extremely undesirable
2	Strongly undesirable
3	Moderately undesirable
4	Mildly undesirable
5	Neutral
6	Mildly desirable
7	Moderately desirable
8	Strongly desirable
9	Extremely desirable

Remember that you are to rate the statements in terms of whether you consider them desirable or undesirable in others. Kindly be sure that you have rated each item."

After the experts had rated the items, the ratings were converted into scores. The median value of each item computed on the basis of experts' ratings on 9-point scale constituted the social desirability scale values for each item. The median of the scale was, theoretically, 5.00. Table 5.2 presents the median value of each item of the scale.

TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
1	7.5*	26	7 5*
2	5.0	27	5 5
3	5.5	28	5.5
4	4.5	29	8.5*
5	5.5	30	6.0
6	5.0	31	4 5
7	3.5*	32	4.5
8	5 0	33	7 0*
9	8.0*	34	3.5*
10	5.5	35	6 0
11	4.5	36	7.5*
12	5.5	37	4 5
13	7.5*	38	5.5
14	5.5	39	4.5
15	5.0	40	7 5*
16	4.5	41	5 5
17	5.5	42	4 5
18	7.5*	43	5 5
19	5.5	44	4.5
20	4.5	45	4.5
21	5.5	46	5.0
22	5.5	47	3.5*
23	6.5*	48	5.5
24	5.0	49	6.0
25	5.5	50	5.5

(*Contd*)

(*Contd.*) TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
51	8 0*	78	5 5
52	5 5	79	4.5
53	7.5*	80	4.5
54	5.0	81	5 5
55	5 5	82	4 5
56	5 5	83	3 0*
57	5 0	84	5.0
58	5.5	85	4 5
59	6.5*	86	3 5*
60	4 5	87	4.5
61	6.5*	88	5.0
62	5.5	89	3.0*
63	5.5	90	5.5
64	7.5*	91	7 5
65	5.5	92	5.0
67	5.5	93	4 5
68	7.5*	94	5 5
69	3.5*	95	5.5
70	3.0*	96	7.5*
71	4.5	97	8.0*
72	4.5	98	5 5
73	2.5*	99	5.5
74	5.5	100	4.5
75	4.5	101	6.5*
76	2.5*	102	7 0*
77	3.5*	103	4 5

(*Contd.*)

(*Contd.*) TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
104	4.5	131	5.5*
105	7.5*	132	6.0
106	4.5	133	3.0*
107	8.0*	134	5.0
108	5.5	135	4.5
109	5.0	136	7.5*
110	4.5	137	7.0*
111	5.0	138	5.5
112	4.5	139	5.5
113	4.5	140	4.5
114	3.5*	141	7.5*
115	5.5	142	5.0
116	7.0	143	4.5
117	5.5	144	5.5
118	5.0	145	3.5*
119	5.0	146	5.5
120	5.5	147	5.5
121	4.5	148	7.0*
122	5.5	149	4.5
123	5.0	150	5.0
124	3.5*	151	5.5
125	5.0	152	5.5
126	5.5	153	7.5*
127	3.5*	154	5.0
128	5.0	155	5.5
129	4.5	156	4.5
130	5.0		

(*Contd.*)

(*Contd.*) TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
157	3.0*	183	3.5*
158	5.0	184	4.0
159	4.5	185	5.5
160	5.0	186	6.0
161	4.5	187	5·0
162	7.5*	188	3.0*
163	4.5	189	4.5
164	6.5*	190	5.0
165	4.5	191	5,0
166	5.5	192	3.5*
167	5.5	193	3 5*
168	3 0*	194	4.5
169	3.5*	195	5.0
170	4.5	196	5.0
171	3.5*	197	4.5
172	6.0	198	3.0*
173	5.5	199	5.0
174	4.5	200	5.5
175	5.0	201	5.0
176	3.5*	202	4.5
177	4.5	203	3.5*
178	5.5	204	4.5
179	6.0	205	3.0*
180	3.0	206	3.5*
181	5.0	207	5.0
182	5.5	208	5.5

(*Contd.*)

(*Contd.*) TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
209	3.5*	235	4.5
210	4.5	236	5.5
211	5.5*	237	3.5*
212	5.0	238	5.5
213	3.0*	239	3.0*
214	4.5	240	7.0*
215	5.5	241	4.5
216	3.5*	242	5.0
217	5.0	243	4.5
218	4.0	244	5.0
219	5.5	245	4.5
220	3.5*	246	3.5*
221	5.5	247	5.5
222	5.0	248	5.0
223	4.0	249	5.5
224	4.5	250	5.0
225	5.0	251	5.0
226	7.5*	252	5.5
227	7.0*	253	6.0
228	4.5	254	4.0
229	4.0	255	4.5
230	4.5	256	3.0*
231	5.0	257	4.5
232	5.5	258	5.0
233	5.0	259	5.5
234	5.5	260	3.5*

(*Contd.*)

(*Contd.*) TABLE 5.2

Serial Numbers of items	Median	Serial Numbers of items	Median
261	5.5	286	5.5
262	5.0	287	4.5
263	4.5	288	5.5
264	5.0	289	7.5*
265	4.5	290	4.0
266	5.5	291	5.0
267	5.0	292	6.0
268	3.5*	293	4.5
269	4.5	294	7.5*
270	5.5	295	5.0
271	5.0	296	7.5*
272	7.5*	297	5.5
273	6.5*	298	4.5
274	7.5*	299	4.0
275	3.5*	300	3.5
276	5.0	301	4.5
277	7.5*	302	4.0
278	4.5	303	5.5
279	4.5	304	6.0
280	5.0	305	7.5*
281	5.5	306	4.0
282	4.0	307	4.0
283	6.5*	308	6.5*
284	7.5*	309	3.5*
285	5.5	310	7.0*

* Items dropped out.

According to Edwards (1964) items having social desirability scale values around median of the social desirability continuum were less prone to social desirability or undesirability tendencies than those which fall outside this range. As such, it was decided to retain only those items whose average experts' ratings was from 4.00 to 6.00 (Abbott, 1975). Eighty nine items did not meet the criterion and were consequently, dropped. The remaining 221 items were employed for item analysis. Table 5·3 presents dimension wise distributions of items retained and dropped after assessment for their social desirability.

TABLE 5.3

Distribution of items among different dimensions after assessment for social desirability

Dimension	Number of items retained	Number of items dropped
Decisiveness	25	10
Responsibility	24	9
Emotional Stability	21	13
Masculinity	26	9
Friendliness	25	10
Heterosexuality	24	10
Ego-Strength	25	9
Curiosity	27	8
Dominance	24	11

Item validity

A review of literature reveals that there are twenty-three methods of item analysis (Helmstadter, 1966, p. 163). While

analyzing items of any psychometric tests, two types of information usually needed : index of item difficulty and index of item validity (Garrett, 1958, p. 162). The question of item difficulty does not arise in personality inventories as there is no 'pass' or 'fail' in responses. For determining the index of item validity different views are held by different psychologists (Horst, 1934; Kelley, 1939; Guilford, 1941: Lawshe, 1942; Ferguson, 1942; DuBois, 1942; Finney, 1944; Turnbull, 1946; Davis, 1946; Vernon, 1948; Johnson, 1951; Michael, Perry and Guilford, 1952; Siegel and Cureton, 1952). Before administering the scale of subjects for item analysis, a clear instruction in a very simple language was also prepared and printed on the first page of the scale so that each subject might be able to follow them before he or she starts responding to items (cf. Appendix I). Subjects were asked to respond to the items by encircling. 'True', if they agreed and 'False', if they disagreed.

Sample

Following Kelley's (1939) instruction the scale was administered on unselected sample of 370 (200 males and 170 females) for the purpose of item analysis. Samples were drawn from different postgraduate departments and colleges of the Patna University. The age range of the subjects was from 14 years to 25 years.

Method of scoring

Items measuring of particular trait or dimension positively and responded as 'true' by the subjects were given a score of one. The negatively worded items, like wise, were given a score of zero for a 'true' response and a score of one for 'false' response. The higher the score on the scale, higher was the subject in the trait.

Procedure

In analysing scale items, item-total test correlation was computed. On the basis of total score of each dimension 27th percentile and 73rd percentile were computed which constituted

the lower and upper groups respectively. Thus both the high and the low groups comprises 27% cases (100 subjects). Table 5.4 presents the distribution of scores at 27th percentile and 73 percentile of each dimension :

TABLE 5.4

Distribution of scores of dimension at 27th and 73rd percentile

Dimension	27th percentile	73 percentile
Decisiveness	14.60	21.60
Responsibility	16.70	20.00
Emotional Stability	14.56	17.00
Masculinity	19.48	23.58
Friendliness	15.68	21.00
Heterosexuality	14.60	20.00
Ego-strength	15.00	22.83
Curiosity	18.00	23.68
Dominance	16.58	20.67

On the basis of this high and low groups on the one hand and two responses of 'True' and 'False' on the other, phi coefficient was computed for each item. Consequently, its value was converted into chi square (X^2). Table 5.5 through 5.12 presents the coefficient of phi correlation and chi square Values of each item of the nine dimensions.

TABLE 5.5

Phi correlation, chi square and level of significance of the items measuring trait of decisiveness

Item Number	Phi correlation	Chi square	Level of significance
2	.30	18.00	.001
3	.12	2.88	N.S. *
4	.20	8.00	.01
5	.25	12.50	.001
6	.22	9.68	.01
8	.10	2.00	N.S. *
10	.11	2.42	N.S. *
11	.14	3.92	.05
12	.50	50.00	.001
14	.11	2.42	N.S. *
15	.23	10.58	.01
16	.70	98.00	.001
17	.17	5.78	.05
19	.14	3.92	.05
20	.60	72.00	.001
21	.65	84.50	.001
22	.25	12.50	.001
24	.12	2.88	N.S. *
25	.62	76.88	.001
27	.22	9.68	.01
28	.08	1.28	N S. *
30	.61	74.62	.001
32	.51	52.02	.001
35	.50	50.00	.001
38	.17	5.78	.05

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.6

Phi correlation, Chi square and level of significance of item measuring trait of responsibility

Item Numbers	Phi correlation	Chi square	Level of significance
2	.07	.98	N.S. *
3	.52	54.08	.001
4	.52	54.08	.001
6	.17	5.78	.05
7	.82	134.48	.001
8	.13	3.38	N.S. *
10	.25	13.50	.001
11	.11	2.42	N.S. *
12	.50	50.00	.001
13	.22	9.68	.01
14	.65	84.50	.001
15	.10	2.00	N.S *
17	.42	35.28	.001
19	.23	10.58	.01
20	.09	1.62	N.S. *
22	.25	13.50	.001
23	.05	.50	N.S. *
24	.39	30.42	.001
25	.33	23.78	.001
27	.14	3.92	.05
28	.17	5.78	.05
32	.75	122.50	.001
34	.62	76.88	.001
37	.13	3.38	N.S. *

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.7

Phi correlation, Chi square and level of significance of items measuring trait of emotional stability :

Item Numbers	Phi correlation	Chi square	Level of significance
3	.44	38.72	.001
4	.25	13.25	.001
6	.62	76.88	.001
7	.65	84.50	.001
10	.14	3.92	.05
11	.17	5.78	.05
12	.05	.50	N.S. *
13	.38	28.88	.001
14	.31	19.22	.001
16	.28	15.68	.001
17	.14	3.92	.05
19	.82	134.48	.001
20	.09	1.62	N.S. *
22	.91	165.62	.001
24	.63	79.38	.001
25	.26	13.52	.001
27	.22	9.68	.01
30	.10	2.00	N.S. *
32	.66	87.12	.001
35	.14	3.92	.05
38	.17	5.78	.05

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.8

Phi correlation, Chi square and level of significance of items measuring trait of masculinity

Item Numbers	Phi correlation	Chi square	Level of significance
1	.24	11.52	.001
2	.22	9.68	.01
4	.08	1.28	N.S. *
6	.40	32.00	.001
7	.11	2.42	N.S. *
8	.38	28.88	.001
9	.14	3.92	.05
10	.35	24.50	.001
11	.12	2.88	N.S. *
13	.10	2.00	N.S. *
15	.66	87.12	.001
16	.58	67.28	.001
17	.24	11.52	.001
18	.26	13.52	.001
19	.14	3.92	.05
20	.07	.98	N.S. *
21	.13	3.38	N.S. *
23	.28	15.68	.001
24	.31	19.22	.001
26	.17	5.78	.05
27	.14	3.92	.05
28	.12	2.88	N.S. *
30	.28	15.68	.001
33	.35	24.50	.001
36	.71	100.82	.001
39	.01	.02	N.S. *

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.9

Phi correlation, Chi square and level of significance of items measuring trait of friendliness.

Item Numbers	Phi correlation	Chi square	Level of significance
1	.22	9.68	.01
2	.65	84.50	.001
3	.61	74.42	.001
5	.23	10.58	.01
6	.81	131.22	.001
7	.28	15.68	.001
9	.32	20.48	.001
10	.61	74.42	.001
12	.10	2.00	N.S. *
13	.24	11.52	.001
14	.27	14.58	.001
15	.13	3.38	N.S. *
17	.26	13.52	.001
18	.28	15.68	.001
19	.31	19.22	.001
21	.23	10.58	.01
22	.70	98.00	.001
23	.06	.72	N.S. *
24	.63	79.38	.001
26	.11	2.42	N.S. *
27	.32	20.48	.001
28	.11	2.42	.001
31	.28	15.68	.001
34	.33	21.78	.001
38	.22	9.68	.01

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.10

Phi correlation, Chi square and level of significance of items measuring trait of heterosexuality

Item Numbers	Phi correlation	Chi square	Level of significance
1	.78	121.68	.001
2	.28	15.68	.001
3	.11	2.42	N.S. *
4	.33	21.78	.001
6	.09	1.62	N.S. *
7	.81	131.22	.001
9	.14	3.92	.05
10	.24	11.52	.001
12	.14	3.92	.05
13	.26	13.52	.001
15	.23	10.58	.01
17	.72	103.68	.001
18	.11	2.42	N.S. *
19	.32	20.48	.001
22	.72	103.68	.001
23	.93	172.98	.001
24	.37	27.38	.001
25	.17	5.78	.05
26	.14	3.92	.05
27	.66	87.12	.001
30	.11	2.42	N.S. *
34	.61	74.42	.001
36	.65	84.50	.001
39	.10	2.0	N.S. *

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.11

Phi correlation, Chi square and level of significance of items measuring the trait of ego-strength

Item Numbers	Phi correlation	Chi square	Level of significance
1	.22	9.68	.01
2	.14	3.92	.05
4	.29	16.82	.001
5	.61	74.62	.001
6	.27	14.58	.001
8	.66	87.12	.001
9	.28	15.68	.001
11	.17	5.78	.05
12	.35	24.50	.001
13	.18	28.88	.001
15	.13	3.38	N.S. *
16	.70	98.00	.001
17	.24	11.52	.001
18	.26	13.52	.001
19	.17	5.78	.05
22	.32	20.48	.001
23	.65	84.50	.001
24	.07	.98	N.S. *
25	.30	18.00	.001
26	.11	2.42	N.S. *
27	.17	5.78	.05
30	.11	2.42	N.S. *
33	.29	16.82	.001
36	.10	.02	N.S. *
38	.09	1.62	N.S. *

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.12

Phi correlation, Chi square and level of significance of items measuring the trait of curiosity

Item Numbers	Phi correlation	Chi square	Level of significance	
1	.23	21.78	.001	
2	.06	.72	N.S.	*
3	.39	30.42	.001	
4	.17	5.78	.05	
5	.38	28.88	.001	
8	.09	1.62	N.S.	*
9	.72	103.68	.001	
10	.24	11.52	.001	
12	.10	2.0	N.S.	*
13	.35	24.50	.001	
15	.13	3.68	N.S.	*
17	.78	121.68	.001	
18	.38	28.88	.001	
19	.07	.98	N.S.	*
20	.14	3.92	.05	
21	.64	81.92	.001	
22	.24	11.52	.001	
23	.06	.72	N.S.	*
24	.10	2.0	N.S.	*
25	.72	103.68	.001	
26	.15	1.50	N.S.	*
27	.14	3.92	.05	
29	.14	3.92	.05	
30	.06	.72	N.S.	*
32	.66	87.12	.001	
34	.28	15.68	.001	
37	.14	3.92	.05	

* Indicates statistically insignificant items and hence they were dropped.

TABLE 5.13

Phi correlation, Chi square and level of significance of items measuring the trait of dominance

Item Numbers	Phi correlation	Chi square	Level of significance	
1	.13	3.38	N.S.	*
3	.33	21.78	.001	
4	.87	151.38	.001	
5	.10	2.00	N.S.	*
6	.14	3.92	.05	
7	.15	4.50	.05	
10	.81	131.22	.001	
11	.09	1.62	.N.S	*
12	.35	24.50	.001	
13	.66	87.12	.001	
15	.07	.98	N.S.	*
16	.61	74.62	.001	
17	.24	11.52	.001	
18	.26	13.52	.001	
20	.11	2.42	N.S.	*
22	.32	20.48	.001	
23	.27	14.48	.001	
24	.39	30.42	.001	
26	.09	1.62	N.S.	*
27	.38	28.88	.001	
28	.15	4.50	.05	
30	.28	15.68	.001	
34	.07	.98	N.S.	*
38	.66	87.12	.001	

* Indicates statistically insignificant items and hence they were dropped.

Thus the items which yielded statistically insignificant chi square values were dropped. Table 5.14 presents the distribution

of the number of items retained and dropped in each dimension of the scale.

TABLE 5.14

Distribution of items among different dimensions after item analysis

Dimension	Abbreviation*	Number of items retained	Number of items dropped
Decisiveness	(स)	19	6
Responsibility	(र)	17	7
Emotional Stability	(ई)	18	3
Masculinity	(म)	18	8
Friendlinless	(फ)	20	5
Heterosexuality	(ह)	19	5
Ego-Strength	(ग)	19	6
Curiosity	(क)	18	9
Dominance	(द)	17	7

* Hindi letters within parenthesis stand for the different dimensions.

In order to test whether or not the dimensions covered by the scale were orthogonal, the scale consisting of 165 items was administered to a heterogeneous sample of 100 student (60 males and 40 females) and intercorrelation values were computed (cf. Table 5.15) with the help of Pearsonian *r* (Carrett, 1958).

It is obvious from Table 5.15 that intercorrelations among the dimensions of the scale are fairly low and statistically insignificant. The coefficients of correlation range from .02 to .15. It provides sufficient statistical evidence regarding the independence of dimensions covered by the present personality scale.

TABLE 5.15

Intercorrelation among different dimensions of the scale*

1 Decisiveness	2 Responsi-bility	3 Emotional Stability	4 Masculinity	5 Friendliness	6 Hetero-sexuality	7 Egostrength	8 Curiosity	9 Domi-nance
1. Decisiveness	.10	.15	.09	.12	.05	.08	.12	.12
2. Responsibility		.12	.10	.06	.11	.13	.15	.13
3. Emotional stability			.13	.11	.10	.12	.02	.08
4. Masculinity				.12	.13	.10	.13	.10
5. Friendliness					.06	.15	.12	.03
6. Heterosexuality						.13	.14	.07
7. Ego-strength							.12	.10
8. Curiosity								.13
9. Dominance								

* None of the correlation values were significant even at. 0.5 level,

Four

Reliability

The concept of reliability occupies central place in educational and psychological testing. According to Stanley, (1964, p. 150) there are three important characteristics of a sound measuring instrument : (i) reliability, (ii) validity, and (iii) usability. Reliability, thus, is the first and primary prerequisite of any measuring instrument.

The term 'reliability' owes its origin to Spearman (1904a, 190-b, 1907, 1910, 1913), Operationally, it is self-correlation of the test. More specifically, reliability refers to internal-consistency and temporal stability of the measurement (Symonds, 1928; Stephenson, 1934; Jones, 1938; Davis. 1944; Mursell, 1947; Thorndike, 1949; Lindquist, 1951; Anastasi, 1961; Stanley, 1964; Freeman, 1965). Both consistency and stability are intimately related but are used in different contexts. When the test yields consistent results upon testing and retesting, it is said to have temporal stability. More appropriately, by consistency is meant to what extent the test is internally consistent when administered once (Freeman, 1965, p. 66). Both stability and consistency are incorporated under a single term 'reliability'.

Logically, Guilford (1956) explained reliability on the basis of variance. Total variance of a set of measurements is defind as the mean of the squares of deviations from mean of the measurements (Guilford, 1956, p. 346). In measurement theory the total variance of a set of scores or measurements is equal to the true variance plus error variance of the scores. Reliability is the proportion of this true variance in total variance. To quote Guilford (1956, p. 436) :

"The reliability of any set of measurements is logically defined as the proportion of their variance, that is, true variance."

Here two points seem to be very important. Firstly, reliability is the property of measurements and not of the measuring instrument as the statement begins with "the reliability of any set of measurements." Secondly, it emphasizes the proportion of true variance in total variance. Lower amount of error variance will increase the proportion of true variance in total variance and this, in turn, will increase reliability. It is therefore necessary to control these factors which are likely to contribute to error variance. Important factors contributing to error variance are vague instructions, vagueness in items, scoring errors, lack of rapport, fatigue effects, unpredictable factors like noise, broken pencil, interference, etcetera, and personal characteristics of the subjects such as fluctuations in attention, poor motivation, health and disturbed emotional conditions (Weidmann, 1930; Ackerson, 1933; Thouless, 1936; Jackson, 1939; Jackson and Ferguson, 1941; Kaitz, 1945; Freeman, 1965).

In keeping with what has been stated above proper steps were taken to control some of these factors. As for example, to minimize fluctuations in attention and fatigue as far as practicable the scale was usually administered in first half of the day in groups of 10 to 20. The assumption was that subjects were fresh in first half of the day, and would take more interest responding to the items of scale. Besides the subjects who felt unwell and who had in the recent part suffered from any major illness were eliminated from the sample. Care was also taken to establish rapport before administering the scale.

In examining the reliability or consistency of a set of measurements there are two fundamental aspects to kept in view, namely, absolute consistency and relative consistency. The former is revealed through the actual amount of variation in scores which results when a particular test is applied more than once to the same individual and the latter is revealed through the degree to which subjects maintain relatively consistent

scores or positions when the same test or its two equivalent forms are applied to all the members of the group and these two sets of measures are subsequently correlated (Thorndike, 1949; Freeman, 1965). The appropriate statistics to express the absolute consistency is the standard error of measurement (Thorndike, 1949, p. 69). Relative consistency is expressed through the coefficient of correlation which is called as the reliability coefficient. There are four methods to estimate the reliability coefficient.

(i) Test-retest method
(ii) Equivalent form Method
(iii) Split-half method
(iv) Inter-item correlation method

Test-retest method or retest method require that the test should be administered twice to the same sample with suitable time interval. Subsequently, the two sets of scores are correlated and the resulting correlation coefficient is referred to as reliability coefficient of temporal stability (Freeman, 1965, p. 69; Stanley, 1964, p. 154). One of the obvious advantages of this method is that the test contents (items) remain completly uniform and equivalent on both occasions which is one of the important requirements of psychological testing (Freeman, 1965, p. 69). Moreover, this method saves much time of the test constructor which might have been wasted in constructing parallel forms of the test. Furthermore, it is easy to develop one form of the test rather than two parallel forms. It is sheerly on these grounds that test reliability is extremely popular among psychometricians.

In spite of its popularity, some objections have been raised against it. Shorter and longer time intervals between two administration of the test have been found to affect the rereliability. In case the time interval is shorter, subjects may recall their first answers tending to make the results of the two administration more alike. The same responses are repeated not because the individual is consistent with respect to the trait being measured by the test but because he restores in memory his previous response. Such sets of scores produce

spuriously high value of reliability coefficient. As Nunnally (1959, p. 108) has opined :

"Memory works to make the two sets of test scores correlate highly and consequently, the reliability coefficient is usually an overestimate when determined by retest method."

Besides memory effects, practice and confidence as a result of familiarity with the test contents in the subjects also have been found to affect the test-retest reliability Anastasi, 1934; Garrett, 1958). Longer time interval such as six months or more, has also been found to affect the reliability coefficient because it produces many psychological and physical changes in respondents. Freeman (1965, p. 70) has opined, "...Numerous investigations have demonstrated that, in general, longer intervals between repeated tests will result in lowering the reliability coefficient; that is, reliability is in part a function of the time elapsed." It is, therefore, ideal that a responsible time interval should be given between the first and the second administration of the test so that the possible errors due to the intervening variables could be minimized. Freeman (1965) suggests an interval of a week or two for this purpose.

Based on the suggestions of Freeman (1965) the present scale was administered twice with a time interval of 14 days to an unselected sample of 100 (50 males and 50 females) from different Colleges and Departments of the Patna University, in groups of 10 to 20. Pearsonian *r* was computed between the two sets of measures to indicate stability coefficient. Table 6.2 presents the retest reliability coefficient for each dimension of the scale.

It is obvious from Table 6.1 that the test-retest reliability coefficient ranges from .73 to .86 which are high and significant indicating the different dimensions of the scale have sufficient temporal stability. It is customary to regard a correlation value of .70 and above as tolerably good.

Split-half method is another popular method of estimating reliability coefficient. It measures internal-consistency of the test scores (Zubin, 1934). The test is administered to a

TABLE 6.1

Pearsonain r for test-retest reliability coefficients for different dimensions of the scale

Dimension	r*
Decisiveness	.78
Responsibility	.81
Emotional stability	.80
Masculinity	·86
Friendliness	.77
Heterosexuality	.75
Ego-strength	.82
Curiosity	.84
Dominance.	.73

* All correlation values were significant beyond .01 level.

group of samples for once and then, it is divided into two equivalent halves. On the basis of correlation of these two halves, an estimate of reliability coefficient of the whole test is determined through Spearman-Brown prophecy formula. Usually, there are two common ways of dividing of the test into two equivalent forms, namely, first-half versus second-half method or odd versus even method. As there is usually no time limit nor does the question of difficulty value of items arise in personality tests, both methods of splitting the test have been frequently used. (Foran, 1931; Jordan, 1935; Goodenough, 1936; Ferguson, 1941; Jackson and Ferguson, 1941.) Due to convenience and high popularity the odd-even method has, however, been the most frequent choice of the test constructor (Remmers and Whisler, 1938). Advantage of the split-half method is that the errors due to variations in the two testing situations are eliminated because all the data for computing the reliability are obtained in single administration. Disadvantages are that in case of speed test the split-half method yields an overestimate

of the true value of the reliability coefficient. As the test is administered for once only, it does not take into account the errors due to instability of the subjects over time. (Thorndike and Ragen, 1955, pp. 129-30.)

For the present personality scale split-half reliability coefficients were also estimated. The scale was administered to a fresh unselected sample of 100 (60 males and 40 females) taken from different colleges and departments of the Patna University. Reliability coefficients were calculated for all the nine dimensions separately. Total items of each dimension were split into two equal halves by the odd-even method, and also by the first half versus second half method. The reliability coefficient of the full length of the scale was estimated through the Spearman-Brown prophecy formula. Table 6.2 presents *r* obtained for each dimension by both the methods (odd-even and first half-second half).

TABLE 6.2

Split-half reliability coefficients for different dimensions of the scale

Dimension	r (Half-length)		r_{11}* (Whole length)	
	Odd-even	First half Second half	Odd-even	First half Second half
Decisiveness	.70	.71	.82	.83
Responsibility	.72	.70	.84	.82
Emotional stability	.80	.77	.89	.87
Masculinity	.75	.74	.86	.85
Friendliness	.84	.81	.90	.89
Heterosexuality	.71	.73	.83	.84
Ego-strength	.72	.73	.84	.84
Curiosity	.71	.70	.83	.82
Dominance	.74	.73	.85	.84

* All correlation values were significant beyond .01 level.

The reliability coefficient of the length of scale ranges from .82 to .90 which are statistically significant indicating the fact that the scale is highly consistent and reliable.

Inter-item correlation method is another method of estimating reliability coefficient which requires that all items of the test should be homogeneous, that is every item should measure the same factor in the same proportion as every other item (Richardson and Kuder, 1939). Scores on every item is correlated with the scores on every other item and the resulting coefficient of correlation, becomes the index of inter-item coefficient of correlation. The method is more or less subjected to the same advantages and disadvantages as that of split-half method. Where the items are not homogeneous, inter-item correlation method underestimates the reliability coefficient (Freeman, 1965).

The coefficients of temporal stability and internal consistency of the present personality scale as measured by the retest method and split-half method respectively are fairly high which warrants its application.

Five

Validity

In psychological measurement the problem of validity arises because the measuring instruments are indirect (Helmstadter, 1966, p. 87). As these instruments yield only indirect measures, it is very essential to gather sufficient evidence to support that the test measures the trait or characteristics for which it was designed.

Validity means truthfulness or usefulness of the test (Stanley, 1964). Thus validity of a test is concerned with what the test measures and how well it measures (Guilford, 1954; Wert, Neidt and Ahmann, 1954; Garrett, 1958; Freeman, 1965; Anastasi, 1968; Cronbach, 1970). A test stands valid against some independent criteria. From this it follows that for a high validity index, a test must show a close correspondence with the criteria. A low correspondence of a test with the criterion measures yields low index of validity.

One of the basic prerequisites of a valid test is that it should be reliable. A test which is not reliable or less reliable, is not expected to correlate well with any external criterion (Freeman, 1965, p. 88; Garrett, 1958, pp. 360-61). Atest which yields inconsistent results usually gives a low correlation with the criterion.

Validity is not governed by all-or-none law, it is a relative term. The test is valid for a particular purpose and in particular situation only (Guilford, 1956; Garrett, 1958; Nunnally, 1959; Anastasi, 1968). Moreover, validity is not a fixed or a unitary characteristic of the test. With the new uses of the test, new validity indices must be sought (Gulliksen, 1950).

In physical measurement the standard of the criterion is readily available. Hence, determination of validity, relatively speaking, is an easy job. In psychological measurement the task becomes rather difficult because independent criteria or standards are not easily available. The task is still more cumbersome when one is engaged in constructing a test of personality. As Freeman (1965, p. 570) has opined :

"...It is in respect to validity, however, that personality inventories as a class present the greatest difficulties and are most vulnerable to criticism. Determination of validity is certainly difficult; yet that must be the most essential requisite of a useful instrument." Lack of independent criteria produces a less accurate validity index for a psychological test as compared to a physical test where there is no dearth of such criteria (Garrett, 1958, p. 354).

In spite of the fact that the determination of validity is difficult psychologists have devised various means to estimate validity coefficient of a test. Broadly, there are three basic types of validity-content, empirical and construct (Helmstadter, 1966, p. 89). Content validity refers to the systematic evaluation of the items or contents to examine whether they do represent the trait being measured by the test and includes face validity, logical or sampling validity and factorial validity. Empirical validity is one in which test under construction is correlated with some external independent criteria and includes concurrent validity. Construct validity which is rather recent addition by Cronbach and Meehl (1955) refers to "...the extent to which the test may be said to measure a theoretical construct or trait" (Anastasi, 1968, p. 114). The clasification of validational techniques vary from author to author. Ghiselli (1964), for example, has classified validity into three types, namely, predictive validity, content validity and construct validity. Freeman (1965) classified validity into face validity, content validity, factorial validity, construct validity and concurrent validity. Cronbach (1970) has classified validity into three principal categories: Content, Criterion-related and construct validity. The categories of validity (Cronbach's) are based upon the views of Standards for Educational and Psychological Tests and Manuals (1966).

For estimating validity coefficients of the present scale several approaches were followed. First, the scale was correlated with the Bell Adjustment Inventory (cf. Appendix II) adapted in Hindi by Hussain (1968). The inventory has been standardized on local samples and has yielded quite satisfactory reliability and validity coefficients. The scale as well as the inventory were administered on an unselected sample of 100 (60 males and 40 females). Scores on each of the nine dimensions were correlated with scores on each of the four areas of adjustment such as home, health, social and emotional as well as on the total scores of the inventory. Table 7.1 presents the correlation coefficients between the scores on the present scale and the inventory.

TABLE 7.1

Pearsonian r_s between the personality scale and the adjustment inventory

Dimensions of the scale	Areas of adjustment inventory				
	Home	Health	Emotional	Social	Total
Decisiveness	—.25**	—.30**	—.28**	—.22*	—.28**
Responsibility	—.13	—.15	—.16	—.11	—.15
Emotional stability	—.11*	—.32**	—.28**	—.31**	—.29**
Masculinity	—.06	—.26**	—.13	—.11	—.15
Friendliness	—.15	—.12	—.02	—.33**	—.11
Heterosexuality	—.10	—.09	—.14	—.09	—.10
Ego-strength	—.13	—.16	—.37**	—.32**	—.18
Curiosity	—.11	—.08	—.16	—.13	—.13
Dominance	—.09	—.10	—.12	—.13	—.14

* Significant at or beyond .05 level
** Significant at or beyond .01 level

It is obvious from Table 7.1 that the correlation values were negative. This is quite in hypothesized direction as higher score on the personality scale indicates higher possession of the trait and higher score on the adjustment inventory means poor adjustment. The dimension of decisiveness yielded significant negative correlation (r_s ranged from —.22 to —.30) with all the four areas

of adjustment as well as with the total scores. It means that a person with higher trait of decisiveness will have a bettera djustment in home, social, health and emotional areas of life. His overall adjustment in these areas will also be satisfactory. Likewise, the dimension of emotional stability correlated negatively with scores on home, health, social, emotional as well as on total scores. The value of r_s ranged from—.21 to—.32 which were all statistically significant. Thus an emotionally stable person will have a better adjustment in home, health, social, emotional field as well as in these different fields taken together. The dimension of friendliness yielded significant negative correlation ($r=-.32$) with social adjustment meaning thereby that the trait of friendliness facilitates better social adjustment. The dimension of ego-strength, likewise, correlated significantly in negative direction with emotional adjustment ($r=-.37$) and social adjustment ($r=-.32$). Thus a person with higher ego-strength will have a better social and emotional adjustment. The correlation of the ego strength with total scores was, however, insignificant ($r=-.18$).

Secondly, the scale was validated against a number of personal and biographical data. Individual's personal and past history provides an useful basis for the correct assessment of the traits of the personality. Nunnally (1959) regarded these data as one of the best and final approach to any study of personality. The validity coefficients of the present scale against the different variables of the Personal Information Blank (cf. Appendix III) was estimated separately for males ($N=100$) and females ($N=100$).

Attempts were made to examine the strength of association between the expressed number of friends by the subjects on the one hand and the different dimensions of the present scale on the other. The expressed number of friends was categorized into three, namely, 'more friends,' 'a few friends,' and 'no friends.' 'More friends' included six or more, 'a few,' less than six and 'no friend,' meant total absence of any friend. Chi square between the high (above median) and the low scorers (below median) on different dimensions of the scale and the incidence of different categories of the expressed number of friends by male subjects ($N=100$) is presented in Table 7.2.

TABLE 7.2

Strength of association between highs and lows on different dimensions and the number of friends expressed by male sample

Dimension	Group	More friends	A few friends	No friends	Chi square value ($df=2$)
Decisiveness	High	35	10	5	6.67 *
	Low	25	10	15	
Responsibility	High	30	10	10	1.46
	Low	25	15	10	
Emotional Stability	High	20	20	10	3.38
	Low	15	30	5	
Masculinity	High	30	15	5	1.17
	Low	25	20	5	
Friendliness	High	30	10	12	14.36 **
	Low	10	20	18	
Hetero-sexuality	High	30	10	10	5.33
	Low	20	20	10	
Ego-strength	High	20	20	10	3.38
	Low	15	30	5	
Curiosity	High	22	20	8	.88
	Low	25	20	5	
Dominance	High	20	20	10	16.16 **
	Low	10	10	30	

* Significant beyond .05 level
** Significant beyond .01 level

It is obvious from Table 7.2 that the chi square values in case of dimensions of decisiveness, friendliness and dominance were statistically significant. This is not surprising as these dimensions have social relevance and this is more true of friendliness and dominance. The remaining dimensions, namely; responsibility, emotional stability, masculinity, heterosexuality, ego-strength, and curiosity were independent of the expressed number of friends as the chi square values were statistically insignificant.

Table 7.3 presents the chi square values computed between the high and the low scorers on different dimensions on the one hand and three different categories of the expressed number of friends by female subjects ($N=100$) on the other.

An inspection of Table 7.3 shows that chi square values in case of emotional stability, friendliness and ego-strength were statistically significant. Hence, these dimensions were found to bear an association with incidence of 'more friends', 'a few friends', and 'no friends'. Compared to the findings of male subjects (cf. Table 7.2) it is only the dimension of friendliness which yielded a statstically significant chi square value in both sexes. Dimensions like decisiveness, responsibility, masculinity, heterosexuality, curiosity and dominance were found to be independent of the impact of the number of friends a female possesses as the chi square values were statistically insignificant.

Subjects were also given a comprehensive list of different kinds of hobbies for unearthing their extra-curricular activities and were requested to indicate their preferences. Attempts were also made to examine the strength of association between high and low number of hobbies (above and below median respectively) and the highs and the lows (above and below median) scorers on different dimensions of the scale. Table 7.4 presents the chi square values computed between high and low spectra of hobbies and the the highs and the lows on different dimensions for male sample ($N=100$).

TABLE 7.3

Strength of association between highs and lows on different dimensions of the scale and the number of friends expressed by female sample

Dimension	Group	More friends	A few friends	No friends	Chi square value (df=2)
Decisiveness	High	30	10	10	1.46
	Low	25	15	10	
Responsibility	High	20	20	10	3.38
	Low	15	30	5	
Emotional Stability	High	40	8	9	6.38
	Low	30	10	10	
Masculinity	High	20	25	5	4.50
	Low	30	15	5	
Friendliness	High	30	15	5	6.79 *
	Low	40	5	4	
Heterosexuality	High	30	10	10	1.46
	Low	25	15	10	
Ego-Strength	High	10	20	18	14.36 **
	Low	30	10	12	
Curiosity	High	20	20	7	2.33
	Low	25	25	3	
Dominance	High	25	10	15	5.00
	Low	15	10	25	

* Significant beyond .05 level
** Significant beyond .01 level

TABLE 7.4

Strength of association between highs and lows on different dimensions of the scale and number of hobbies chosen by male sample

Dimension	Group	Hobbies		Chi square value (df=1)
		High	Low	
Decisiveness	High	26	24	.36
	Low	23	27	
Responsibility	High	23	27	.158
	Low	25	25	
Emotional stability	High	24	26	.04
	Low	23	27	
Masculinity	High	23	27	.64
	Low	27	23	
Friendliness	High	25	27	.03
	Low	24	24	
Heterosexuality	High	23	27	.15
	Low	25	25	
Ego-strength	High	24	26	.36
	Low	27	23	
Curiosity	High	26	24	.16
	Low	24	26	
Dominance	High	27	23	.04
	Low	26	24	

An inspection of Table 7.4 reveals that dimensions like decisiveness, responsibility, emotional stability, masculinity, friendliness, heterosexuality, ego-strength, curiosity and dominance are not related with the preferences for fewer or greater number of hobbies by the subjects. The values of chi quare were all statistically insignificant.

Table 7.5, likewise, presents the chi quare values computed between the high and the low frequencies of extracurricular activities and the high and the low scores on the different dimensions of the scale for female subjects ($N=100$).

An inspection of Table 7.5 makes it obvious that none of the chi square values was statistically significant. Hence, it provides supporting evidence for the fact that dimensions like decisiveness, responsibility, emotional stability, masculinity, friendliness, heterosexuality, ego-strength, curiosity and dominance were independent of the number of hobbies expressed by females so found in the case of male subjects (cf. Table 7.4).

Attempts were also made to examine the relationship, if any, between the influence of father, mother, elder brother, elder sister or other significant adult members of the family on the one hand and the high and the low scorers on different dimensions of the scale on the other, for male sample ($N=100$) and for for female sample ($N=100$) separately. Since there were a few cases showing the influence of 'elder sister', this category was pooled with the category of 'elder brother'. The impact of other significant adult members of the family except parents and elder brother has hardly been directly explored. As such, the impact of the members of the family other than parents and elder brother was dropped from the analysis. Table 7.6 presents the chi square values computed between the frequencies of high and low scorers on different dimensions and the three different categories of influences of the members of the family for male sample ($N=100$).

TABLE 7.5

Strength of association between highs and lows on different dimensions of the scale and the number of hobbies chosen by female

Dimension	Group	Hobbies High	Hobbies Low	Chi squre value ($df=1$)
Decisiveness	High	23	27	.64
	Low	27	23	
Responsibility	High	29	21	2.56
	Low	21	29	
Emotional Stability	High	24	26	.04
	Low	25	25	
Masculinity	High	23	27	.36
	Low	26	24	
Friendliness	High	24	27	.03
	Low	24	25	
Heterosexuality	High	26	24	.36
	Low	23	27	
Ego-strength	High	23	25	.14
	Low	27	25	
Curiosity	High	24	23	.002
	Low	27	26	
Dominance	High	24	26	.36
	Low	27	23	

TABLE 7 6

Strength of association between highs and lows different dimensions of the scale and the influences of father, mother, elder brother or sister for male sample

Dimension	Group	Influence of father	Influence of mother	Influence of brother or sister	Chi Square values (df=2)
Decisiveness	High	30	15	5	6.42*
	Low	40	5	5	
Responsibility	High	22	20	8	.88
	Low	25	20	5	
Emotional Stability	High	30	10	10	5.46
	Low	25	20	5	
Masculinity	High	40	8	2	6.98*
	Low	30	10	10	
Friendliness	High	30	10	12	14.36**
	Low	10	20	18	
Hetero-sexuality	High	20	20	10	16.66**
	Low	10	10	30	
Ego-strength	High	22	20	8	.88
	Low	25	20	5	
Curiosity	High	40	5	5	4.96
	Low	30	10	10	
Dominance	High	22	20	8	.88
	Low	25	20	5	

* Significant beyond .05 level
** Significant beyond .01 level

Table 7.6 displays that dimensions of decisiveness, masculinity, friendliness and heterosexuality were significantly associated with the influences of father, mother, elder brother or sister as all the chi square values were statistically significant. The remaining dimensions such as responsibility, emotional stability, ego-strength, curiosity, and dominance were found to be independent influence of father, mother, elder brother or sister.

Table 7.7, likewise, presents the chi square values computed between the high and the low scorers on different dimensions of the scale and the influences of father, mother, elder brother or sister for female sample ($N=100$).

It is obvious from Table 7.7 that dimensions of responsibility, friendliness and dominance were related to the variables such as, influences of father, mother, elder brother or sister as the chi square values were significant. All these dimension were different from those found statistically significant for the male sample. In case of remaining dimensions such as decisiveness, emotional stability, masculinity, heterosexuality, ego-strength and curiosity the chi square values were insignificant and hence, it provided support for the fact that these personality dimensions did not go with variables such as influences of father, mother, elder brother or sister.

Attempts were made to examine the relationship, if any, between the high and the low scorers on different dimensions of the scale on the one hand, and the birth order (first born and later born) on the other for males ($N=100$) and for females ($N=100$) separately. Table 7.8 presents the chi square values computed between birth order and the high and the low scorers on different dimensions of the scale for male sample ($N=100$).

It is obvious from Table 7.8 that dimensions like decisiveness, responsibility, heterosexuality, ego-strength and dominance were related to the variable of birth order as the chi square values were found statistically significant. The remaining chi square values for dimensions such as emotional stability, masculinity, friendliness and curiosity were statistically insignificant.

TABLE 7.7

Strength of association between highs and lows on different dimensions of the scale and the influences of father, mother, elder brother or sister for female sample

Dimension	Group	Influence of father	Influence of mother	Influence of elder brother or sister	Chi square values ($df=2$)
Decisiveness	High	30	10	10	4.70
	Low	40	5	5	
Responsibility	High	30	15	5	6.42 *
	Low	40	5	5	
Emotional Stability	High	20	25	5	4.50
	Low	30	15	5	
Masculinity	High	20	20	10	3.38
	Low	15	30	5	
Friendliness	High	40	10	1	15.60**
	Low	20	20	9	
Heterose-xuality	High	30	10	10	5.33
	Low	20	20	10	
Ego-strength	High	20	20	8	4.55
	Low	25	25	2	
Curiosity	High	40	5	2	.01
	Low	45	6	2	
Dominance	High	30	15	5	6.42 *
	Low	40	5	5	

* Significant beyond .05 leval
** Significant beyond .01 level

TABLE 7.8

Strength of association between highs and lows on different dimensions of the scale and the birth order of the male sample

Dimension	Group	Birth order		Chi square values ($df=1$)
		First born	Later born	
Decisiveness	High	20	30	4.00 *
	Low	30	20	
Responsibility	High	40	10	25.98 *
	Low	15	35	
Emotional Stability	High	30	20	1.11
	Low	25	25	
Masculinity	High	24	26	·69
	Low	20	30	
Friendliness	High	30	22	2·56
	Low	20	28	
Hetero-sexuality	High	22	28	3.92 *
	Low	32	18	
Ego-strength	High	20	30	16.66 **
	Low	40	10	
Curiosity	High	26	24	.64
	Low	22	28	
Dominance	High	13	37	21.18 **
	Low	36	14	

* Significant beyond .05 level
** Significant beyond .01 level

TABLE 7.9

Strength of association between highs and lows on different dimensions of the scale and the birth order of female sample

Dimension	Group	Birth order		Chi square values ($df=1$)
		First born	Later born	
Decisiveness	High	22	28	2.56
	Low	30	20	
Responsibility	High	20	30	4.00 *
	Low	30	20	
Emotional Stability	High	24	26	.36
	Low	27	23	
Masculinity	High	22	28	3.92
	Low	32	18	
Friendliness	High	26	25	.03
	Low	24	25	
Heterosexuality	High	30	20	1.01
	Low	25	25	
Ego-strength	High	10	38	14.29 **
	Low	30	22	
Curiosity	High	22	25	.35
	Low	28	25	
Dominance	High	20	30	16.66 **
	Low	40	10	

* Significant beyond .05 level
** Significant beyond .01 level

Table 7.9 presents the chi square values computed between the high and the low scorers on different dimensions of the scale and the birth order for female subjects ($N=100$).

Table 7.9 shows that in case of female sample dimensions like responsibility, ego-strength and dominance were related to the birth order as the chi square values were statistically significant. The remaining dimensions such as decisiveness, emotional stability, masculinity, friendliness, heterosexuality and curiosity were found to be independent of the birth order as the values of chi square were statistically insignificant.

TABLE 7.10

Pearsonian r_S computed between self-ratings and the total scores for different dimensions for male and female samples

Dimension	* Coefficients of correlation	
	Males ($N=100$)	Females ($N=100$)
Decisiveness	.73	.75
Responsibility	.65	62
Emotional stability	.82	.74
Masculinity	.55	.68
Friendliness	.70	.84
Heterosexuality	.75	.81
Ego-strength	.65	.66
Curiosity	.81	.73
Dominance	.82	.61

* All correlation values were significant beyond .01 level.

Lastly, attempts were also made to correlate the present personality scale with the self-ratings of the subjects. Subjects (100 males and 100 females) were asked to rate or to place

themselves on 11 point percentage scale ranging from 0% to 100% (0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%) with respect to each item of the mine dimensions of the scale. Subsequently, their ratings were converted into scores and were correlated with the total scores on the corresponding dimension of the scale. As for example, self-ratings on decisiveness were correlated with the total scores on decisiveness, self-ratings on responsibility were correlated with the total scores on responsibility and so on. Table 7.10 presents the correlation values (Pearsonian r_S) obtained between the self-rating and the scores on the personality scale for males and females separately.

It is obvious from Table 7.10 that r_S for male sample ranged from .55 to .82 and from .61 to .84 for female sample. The values of r_S were fairly high and statistically significant providing evidence for the scale to be a valid instrument.

Six

Norms

Norms are essential requirements of any standardized test. Raw scores which are simply numbers or points obtained by a person on a test, have ordinarily no meaning in themselves. They become meaningful only when they are converted into derived scores and compared to the performance of a normative sample or standardization sample (Anastasi, 1968, p. 39). Statistically, norms are regarded as the average (mean or median) score obtained by a representative sample on a test (Flanagan, 1951; Thorndike and Hagen, 1955; Freeman, 1965; Anastasi, 1968). Psychological test norms, thus, represent the average performance of the sample constituting standardization group. These norms are, however, never absolute, universal or permanent (Anastasi, 1968, p. 63). With change in time, a change in available norms is required.

One of the important prerequisites of norm is that the sample must truely represent the population. Again, in order that a sample is truly representative of its population, the first requirement is that the population itself should be well specified and defined in terms of objectives of the test (Anastasi, 1968). To ensure this representativeness of sample, the investigator should also observe that the sample chosen represents a cross section of the population with special reference to geographical distributions, levels of educational training, sexes and other relevant characteristics which are likely to influence the test performance of the subjects. The number of samples should also be larger as far as practicable because in larger samples the probability of sampling error is low (Anastasi, 1961; Nunnally, 1959).

In the present scale it was decided to develop local norms which are more appropriate than broad national norms for various reasons (Anastasi, 1968, p. 6·). The first step taken was to specify the population for which the scale was intended. The scale is meant for measuring the personality traits of the college or university-going students of Patna District.

There are different types of norms, namely, age norms, grade norms, percentile norms and standard scores norms (Thorndike and Hagen, 1955; Anastasi, 1968; Freeman, 1965; Helmstadter, 1966). Age norms represent the average score obtained by sample of a particular age group and are meaningful for the traits which vary with age, that is, show a progressive increase or decrease with advancement of age (Thorndike and Hagen 1955; Anastasi, 1968). Grade norms represent the average performance of samples at certain grade or class and are suited mostly to educational achievement tests. Standard scores norms show a person's distance from the mean in terms of the standard deviation of the entire distribution. Thus the individual raw scores are expressed in terms of units of standard deviation which are equal and carry the same meaning throughout its range.

In the present case the percentile norms showing average performance of a standardized group expressed in terms of percentile ranks were developed. Percentile rank (PR) on any test, designates the percentage of cases or persons lying below it (Thorndike and Hagen, 1955; Freeman, 1965; Helmstadter, 1966, Anastasi, 1968; Cronbach, 1970) An individual securing a percentile rank of 40 on any test is situated above forty per cent of the group of which he is a member or stated otherwise, forty per cent members of the group are below his rank. Reasons for preferring percentile norms over others are that they are easy to compute and are readily understood and interpreted even by persons who are untrained. They can be used with the both types of sample, that is, adults or children and are suited to any type of test whether it is a personality test, an achievement test or an aptitude test (Anastasi, 1968). Moreover, percentile technique makes no assumption regarding the total distribution. As Freeman (1965, p. 125) has opined :

"...This method has the advantage of not depending upon any assumptions regarding the characteristics of the distribution with which it is used. The distribution might be normal, skewed or rectangular."

Percentile norms have, however, been criticised on the grounds of marked unequality of units especially at the extremes of distribution (Anastasi, 1968), that is, smaller differences in raw scores at the centre of the distribution tend to be magnified whereas larger differences at the extremes of the distribution tend to be reduced (Helmstadter, 1966). Despite these limitations percentile norms have been widely used and adapted by the test constructor and are relatively more popular.

Sampling

The norms for the present scale were developed on a sample of 1,000 students. It included students from arts, commerce, science, medical and engineering faculties of both sexes residing in either rural or Urban areas. This was done to provide a cross sectional representation of the students' population. The scale was administered in groups of 20 to 30. Attempts were also made to include in the sample the number of students approximately proportional to their total strength in population. The distribution of samples is as under :

Faculties	Number of students
Arts	400
Science	250
Commerce	150
Medical	100
Engineering	100

Since the scale intends to measure nine different dimensions of personality, it was decided to construct norms for each dimension separately. But before constructing norms *t* ratios were computed for each dimension with respect to the variables of

geographical distributions (rural and urban), sexes (male and female) and educational levels (undergraduate and postgraduate) to examine whether or not they differed significantly. Table 8.1 presents the Mean, *SD* and *t* ratios for rural and urban students.

TABLE 8.1

Mean, SD and t ratios for rural and urban sample

Dimension	Geographical distribution	*N*	Mean	*SD*	*t* ratio* *df*=998
Decisiveness	Rural	400	11.37	3.88	.42
	Urban	600	11.26	3.53	
Responsibility	Rural	400	10.20	2.87	.84
	Urban	600	10.36	3.01	
Emotional Stability	Rural	400	10.33	4.05	1.25
	Urban	600	10.03	3.95	
Masculinity	Rural	400	9.87	3.65	.12
	Urban	600	9.90	3.15	
Friendliness	Rural	400	12.03	2.02	1.36
	Urban	600	11.84	2.33	
Heterosexuality	Rural	400	10.63	2.02	.94
	Urban	600	10.84	4.85	
Ego-strength	Rural	400	10.86	3.34	.91
	Urban	600	11.06	3.87	
Curiosity	Rural	400	11.55	3.89	.93
	Urban	600	11.35	2.36	
Dominance	Rural	400	11.34	3.88	.17
	Urban	600	10.38	3.56	

* The values *t* of ratios were not significant even at .05 level.

Table 8 2 presents the Mean, *SD* and *t* ratios for undergraduate and postgraduate students.

TABLE 8.2

Mean, SD and t ratios for undergraduate and postgraduate samples

Dimension	Educational level	*N*	Mean	*SD*	*t* ratios* *df*=998
Decisiveness	Undergraduate	700	12.03	3.01	1.14
	Postgraduate	300	12.03	2.38	
Responsibility	Undergraduate	700	10.88	4.33	.51
	Postgraduate	300	11 02	3.84	
Emotional Stability	Undergraduate	700	10.85	2 46	.43
	Postgraduate	300	10.75	3.73	
Masculinity	Undergraduate	700	10.23	3.89	.56
	Postgraduate	300	10 35	2 75	
Friendliness	Undergraduate	700	10.85	3.46	.20
	Postgraduate	300	12.00	3.75	
Heterosexuality	Undergraduate	700	10.85	3.44	.36
	Postgraduate	300	10.76	3.64	
Ego-strength	Undergraduate	700	11.77	4.03	.88
	Postgraduate	300	12.01	3.95	
Curiosity	Undergraduate	700	10.75	2.37	1.37
	Postgraduate	300	11.02	3.04	
Dominance	Undergraduate	700	10.84	3 38	.07
	Postgraduate	300	11.04	3.43	

* The values of *t* ratios were not significant even at .05 level.

It is obvious from Tables 8.1 and 8.2 that none of the *t* ratios was statistically significant. Hence, it was decided to pool the data together and develop a common norm for them. Before constructing this norm, it was also found out whether there existed any significant difference between male and female students. Table 8.3 presents the Mean, *SD*, and *t* ratios computed between male and female students.

TABLE 8.3

Mean, SD and t ratios for male and female samples

Dimension	Sex	N	Mean	SD	*t* ratios *df*=998
Decisiveness	Male	550	11.33	2.37	.34
	Female	450	11.39	3.01	
Responsibility	Male	550	11.91	2.03	8.81 ***
	Female	450	12.88	3.31	
Emotional stability	Male	550	10.31	3.87	1.30
	Female	450	10.02	3.32	
Masculinity	Male	550	11.53	3.86	4 10 ***
	Female	450	10 66	2.95	
Friendliness	Male	550	12.77	4.35	2.49 **
	Female	450	12.02	3.96	
Heterosexuality	Male	550	10.95	3.25	.46
	Female	450	10.86	3.04	
Ego-strength	Male	550	11.02	4.53	.51
	Female	450	10.89	3.56	
Curiosity	Male	550	11.75	3 38	.46
	Female	450	11.15	4.09	
Dominance	Male	550	11.34	2.08	4.22 ***
	Female	450	10.64	3.05	

** Significant beyond .05 level.
*** Significant beyond .01 level.

It is apparent from Table 8.3 that male subjects differ from female subjects with respect to the dimensions of responsibility, friendliness and dominance as the values of t ratios were statistically significant. In the remaining dimensions such as decisiveness, emotional stability, heterosexuality, ego-strength and curiosity difference between male and female subjects was statistically insignificant. Accordingly, it was decided to pool the data and prepare a common norm for both sexes for these dimensions namely, decisiveness, emotional stability, heterosexuality, ego-strength and curiosity. Separate norms for such dimension as responsibility, masculinity, friendliness and dominance were, however, developed for male and female subjects.

Table 8.4 presents the percentile norms of both sexes ($N=1000$) for decisiveness, emotional stability, heterosexuality, ego-strength and curiosity. The norms have been presented in the ten step interval of percentile rank and the score point has been converted into integral score (Guilford, 1956, p. 111).

TABLE 8.4

Percentile Norms of both sexes for the dimensions of decisiveness, emotional stability, heterosexuality, ego-strength and curiosity*

Percentile Rank	Decisiveness Score point	Decisiveness Integral point	Emotional Stability Score point	Emotional Stability Integral point	Heterosexuality Score point	Heterosexuality Integral point	Ego-strength Score point	Ego-strength Integral point	Curiosity Score point	Curiosity Integral point
95	15.9	16	14.5	15	14.7	15	14.9	15	14.6	15
90	13.5	14	13.5	14	13.5	14	13.7	14	13.3	14
80	12.5	13	12.3	14	11.5	12	12.6	13	12.3	13
70	11.5	12	11.3	12	10.4	11	11.7	12	11.5	12
60	11.1	12	9.7	10	9.5	10	11.2	12	11.1	12
50	10.7	11	9.1	10	9.0	9	10.9	11	10.7	11
40	10.3	11	8.5	9	8.5	9	10.5	11	10.2	11
30	9.9	10	8.1	9	7.9	8	10.0	10	10.0	10
20	9.5	10	7.5	8	7.5	8	9.7	10	9.6	10
10	7.7	8	5.9	6	6.3	7	8.8	9	8.0	8

* Percentile Norms were graphically presented through smoothed ogives in figues 3.1, 3.2, 3.3, 3.4 and 3.5.

Table 8.5 presents the percentile norms of male sample (N=550) for the dimensions of responsibility, masculinity, friendliness and dominance.

TABLE 8.5

Percentile Norms for the dimensions of responsibility, masculinity, friendliness and dominance of male sample*

Percentile Rank	Responsibility		Masculinity		Friendliness		Dominance	
	Score point	Integral score	Score point	Integral score	Score point	Integral score	Score point	Integral score
95	14.6	15	15.8	16	15.7	16	13.9	14
90	13.5	14	13.5	14	13.5	14	12.3	13
80	12.0	12	11.9	12	12 4	13	9.9	10
70	11.3	12	9.5	10	11.4	12	9.3	10
60	10.3	11	9.1	10	11.1	12	8.9	9
50	10.5	11	8.7	9	10.7	11	8.6	9
40	10.1	11	8.4	9	10.4	11	8.3	9
30	9.7	10	8.0	8	10.0	10	8.0	8
20	9.1	10	7.7	8	9.7	10	7.7	8
10	7.7	8	6.6	7	8.5	9	6.5	7

* Percentile Norms were graphically presented through smoothed ogives in figures 3.6, 3.7. 3.8, and 3.9

Table 8.6 presents the percentile norms for the dimensions of responsibility, masculinity, friendliness and dominance for female sample (N=450).

TABLE 8.6

Percentile Norms for the dimensions of responsibility, masculinity, friendliness and dominance of female samaple*

Percentile Rank	Responsibility		Masculinity		Friendliness		Dominance	
	Score point	Integral score	Score point	Integral score	Score point	Integra score	Score point	Integral score
95	14.1	15	12.7	13	14.7	15	13.5	14
90	11.6	12	10.5	11	12.8	13	12.1	13
80	9.5	10	9.5	10	10.5	11	11.3	12
70	9.1	10	9.1	10	9.4	10	11.1	12
60	8.8	9	8.8	9	9.1	10	10.8	11
50	8.5	9	8.3	9	8.8	9	10.5	11
40	8.2	9	8.0	8	8.5	9	10.1	11
30	7.9	8	7.7	8	8.3	9	9.9	10
20	7.6	8	7.3	8	7.9	8	9.7	10
10	6.3	7	6.0	6	7.5	8	7.5	8

* Percentile Norms were graphically presented through smoothed ogives in figures 3.10, 3.11, 3.12 and 3.13.

It is obvious from Table 8.4 through 8.6 that some percentile ranks have the same integral scores after coverting the score points into integral scores. However, this does not mean that the two integral scores were originally equal.

It was also decided to give a quantitative description of scores obtained on different dimensions of the scale in terms of five categories, namely, very satisfactory, satisfactory, average, unsatisfactory, and very unsatisfactory. Table 8 .7 presents the qualitative description of the scores on the scale.

TABLE 8.7

Quantitative descriptions of scores on different dimension of the scale

Dimensions	Very satisfac-tory	Satis-factory	Average	Unsatis-factory	Very unsatis-factory
Decisiveness	16 – 19	12—15	10—12	8—10	upto 7
Responsibility	14—17	12—13	10—11	8—9	upto 7
Emotional stability	15—18	12—14	10—11	7—9	upto 6
Masculinity	14—18	11 – 13	9—10	7—8	upto 6
Friendliness	16—20	13—15	11—12	8—10	upto 7
Heterosexuality	14—19	12—13	10—11	8—9	upto 7
Ego-strength	15—19	13—14	11—12	8—10	upto 7
Curiosity	15—18	13—14	11—12	8—10	upto 7
Dominance	14—17	12—13	9—11	7—8	upto 6

A subject obtaining a score of 12 on the dimension of responsibility, for example, would be classified as 'satisfactory' in that very trait of the personality and so on the meaning of the scores would be interpreted according to the above table.

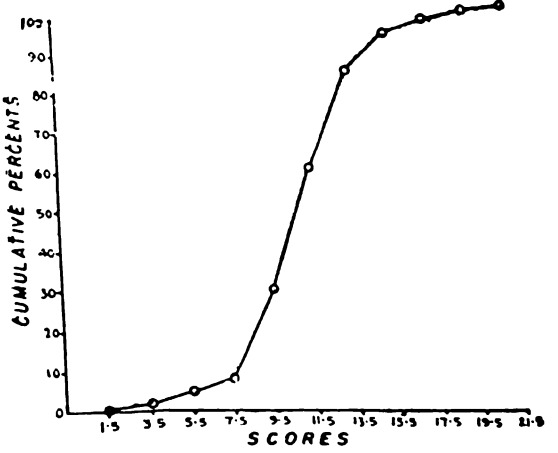

Fig. 3.1

Ogive representing percentile norms for the Dimension of 'Decisiveness' (Males and Females)

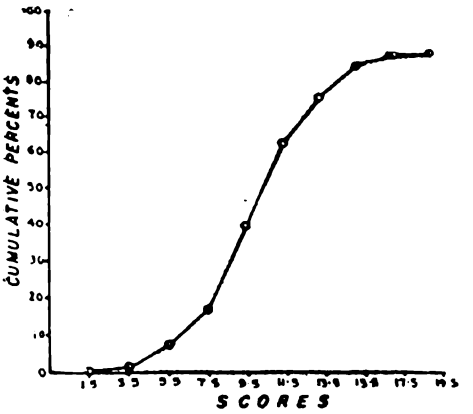

Fig. 3.2

Ogive representing the percentile norms for the Dimension of 'Emotional Stability' (Males and Females)

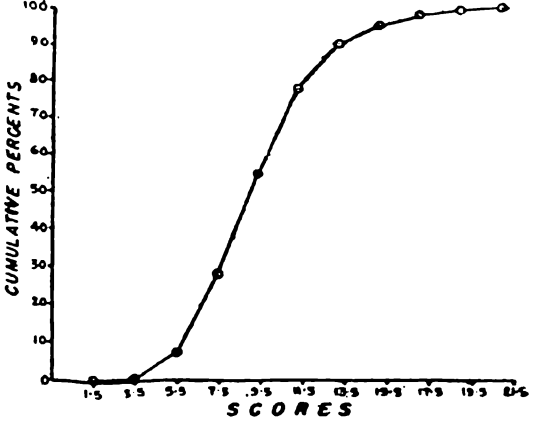

Fig. 3.3

Ogive representing the percentile norms for the Dimension of 'Heterosexuality' (Males and Females)

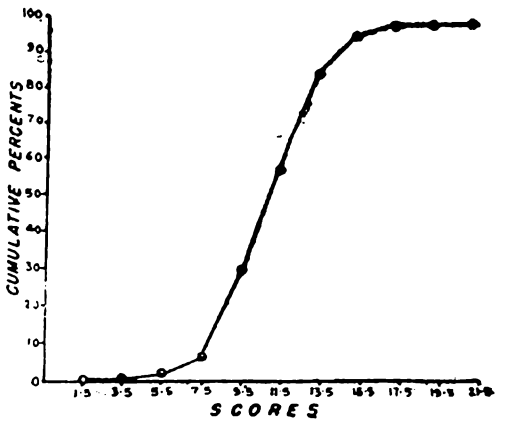

Fig. 3.4

Ogive Representing the percentile norms for the Dimension of 'Ego-Strength' (Males and Females)

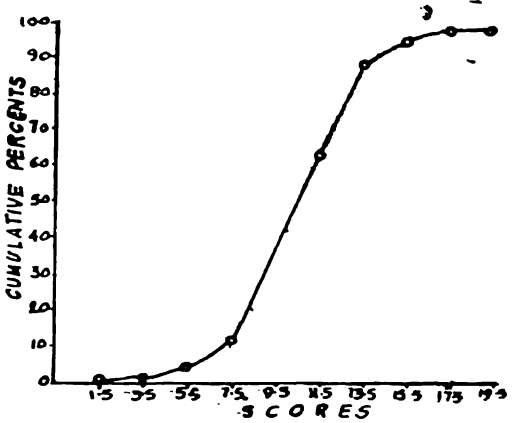

Fig. 3.5

Ogive representing the percentile norms for the Dimension of 'Curiosity' (Males and Females)

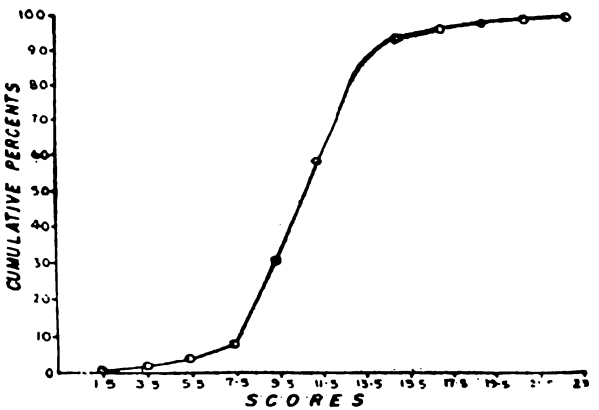

Fig. 3.6

Ogive representing the percentile norms for the Dimension of 'Responsibility' (Males)

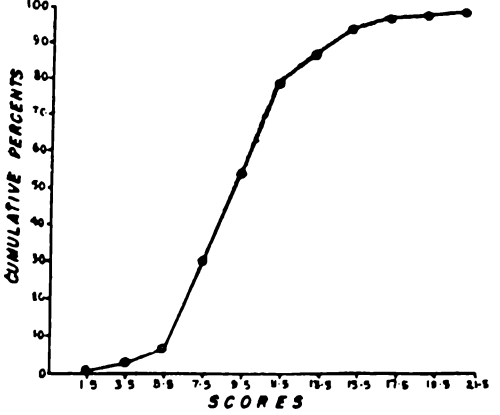

Fig. 3.7

Ogive representing the percentile norms for the Dimension of 'Masculinity' (Males)

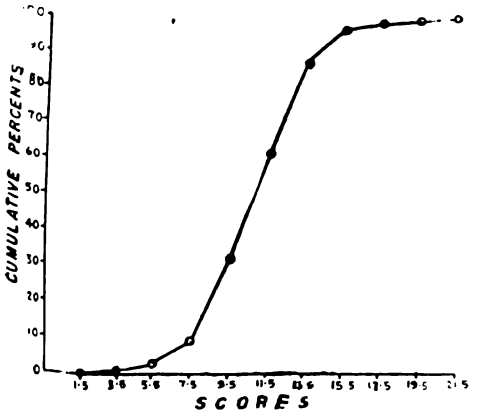

Fig. 3.8

Ogive representing the percentile norms for the Dimension of 'Friendliness' (Males)

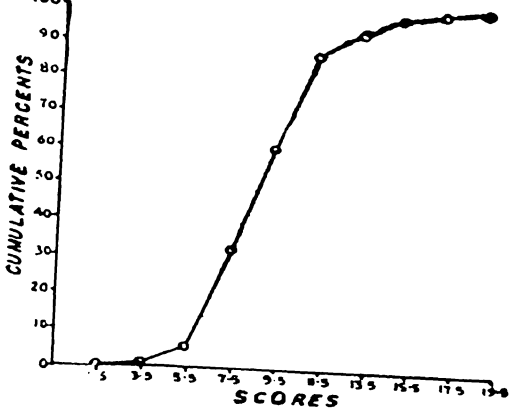

Fig. 3.9

Ogive representing the percentile norms for the Dimension of 'Dominance' (Males)

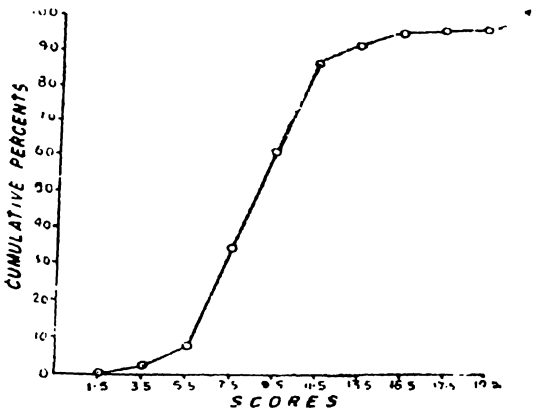

Fig. 3.10

Ogive representing the percentile norms for the Dimension of 'Responsibility' (Females)

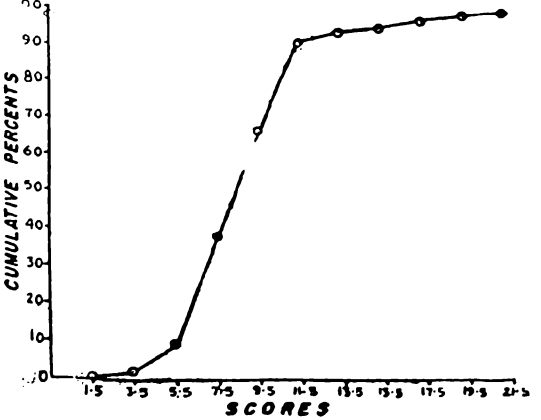

Fig. 3.11

Ogive representing the percentile norms for the Dimension of 'Masculinity' (Females)

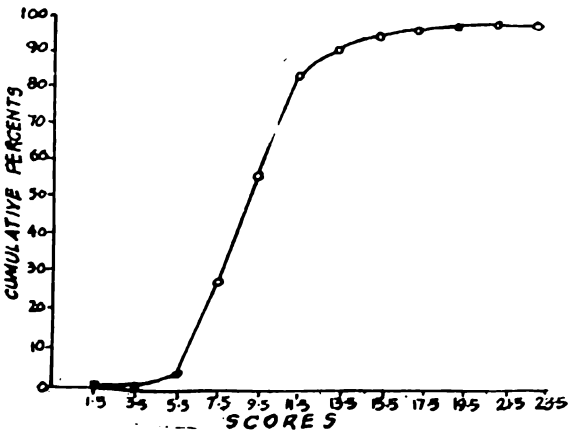

Fig. 12

Ogive representing the Percentile norms for the Dimension of 'Friendliness' (Females)

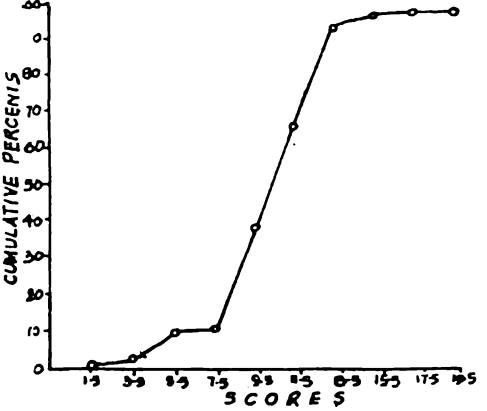

Fig. 3.13

Ogive representing the percentile norms for the Dimension of 'Dominance' (Females)

Seven

Summary and Conclusion

The present research was undertaken with a view to contructing a scale for measuring certain social traits or dimensions of personality of the college or university-going students. Nine such dimensions, namely, decisiveness, responsibility, emotional stability, masculinity, friendliness, heterosexuality, ego-strength, curiosity and dominance were selected in accordance with their social significance out of a list of twenty on the basis of experts' opinion. All these dimensions were defined operationally on the basis of activities which were supposed to provide a representative coverage of the concerned dimension. Items for each dimension were written separately. Subsequently, items were suitably examined and modified in the light of suggestions made by a group of experts and subjects. Social desirability values of the items were also determined and the items whose social desirability scale values fell outside the moderate range of the continuum were dropped.

For the purpose of item analysis the scale was administered to an unselected sample of 370 (200 males and 170 females) and on the basis of the total scores upper 27% and lower 27% were selected, constituting the high and the low groups respectively. The coefficients of phi correlation were computed for each item, and subsequently, they were converted into chi square values. Items yielding significant chi square values were retained and the remaining items were dropped. Thus a total of 165 items were retained for the final form of the scale. Distribution

of 165 items among the different dimensions of the scale was as under :

Dimension	Number of items retained
Decisiveness	19
Responsibility	17
Emotional stability	18
Masculinity	18
Friendliness	20
Heterosexuality	19
Ego-strength	19
Curiosity	18
Dominance	17

Reliability coefficients of each dimension of the scale were calculated separately. For calculating reliability coefficients, retest and split-half methods were followed. Retest reliability coefficient ranged from .73 to .86, which were all statistically significent beyond .01 level. Split-half reliability coefficients of the scale were calculated by both the methods—the odd-even and the first half versus second half. Split half coefficients ranged from .82 to .90, which were all significant beyond .01 level. Intercorrelations among the different dimensions were also calculated and the values of the correlations were low and statistically insignificant providing evidence for the independence of the dimensions.

For computing validity the scale was correlated with the Bell's Adjustment Inventory adapted by Hussain (1968). Some of the dimensions of the scale yielded significant correlation with different areas of the adjustment inventory. The scale was also validated against a number of personal and biographical variables and most of the chi square values were found to be significant. The scale was validated against the self-ratings.

done by subjects and here again, the coefficients of validity were found to be statistically significant.

Finally, percentile norms were constructed for both sexes for the dimensions of decisiveness, emotional stability, hetero-sexuality, ego-strength and curiosity. Common norms were prepared for such dimensions in which the two sexes did not differ statistically. Percentile norms of the remaining dimensions such as responsibility, masculinity, friendliness and dominance were, however, calculated for male and female samples separately as males and females differed on these dimensions beyond chance.

It is hoped that the present personality scale which is strictly meant for measuring certain social personality traits or dimensions of the College or University-going students, will prove useful and helpful in research, guidance and selection purposes. High temporal and internal-consistencies reliabilities and evidences in the favour of the validity further warrant the application of the scale for the these purposes. In any scientific research there is always possibility for some modifications or changes. The present work is no exception The scale, for example, can be further made useful by provinding norms for different professional groups, physically handicapped individuals and the like.

APPENDIX I

Differential Personality Scale* has the following distribution of items dimensionwise

Dimensions of the Scale	*No. of items*
Decisiveness	19
Responsibility	17
Emotional Stability	18
masculinity	18
Friendliness	20
Heterosexuality	19
Ego Strength	19
Curiosity	17
Dominance	18
	165 items

* Items of Differential Personality Scale are in Hindi. Request fort he scale can be made from author.

APPENDIX II

Mohsin-Shamshad Adaptation of Bell Adjustment Inventory (Student Form)

Areas of inventory	*No. of items*
Home	35
Health	31
Emotional	34
Social	35
	135 items

The reliability Coefficients of the different areas of the inventory ranged from .700 to .932 and the inventory was validated against several external criteria such as the Eysenck's Personality Inventory, Contrasted groups (consisting of normals and neurotics) and other personal and biographical variables. Most of the validational results was significant beyond ·05 level. A percentile norm has been developed for the inventory.

APPENDIX III

(Personal Information Blank)

Name :

Age : Sex :

1. Are you married ? Yes No
2. Is your father alive ? Yes. No
3. If not what was your approximate age at the time of his death ?
4. Is your mother alive ? Yes No
5. If not, what was your approximate age at the time of her death ?
6. Indicate your birth order :

   1 2 3 4 5 6 7 8 9 10 or alone ?
7. Whom of the following has the greatest influence upon you ?

   (a) Father (b) Mother (c) The eldest brother (d) The eldest sister (e) Any other person.
8. What is the exact number of your intimate friends ?
9. Indicate by putting a tick mark (√) on those activities in which you are interested :

   (i) Kite flying (ii) Swimming (iii) Attending radios (iv) Photography (v) Visiting motion pictures (vi) Boating (vii) Ticket collection (viii) Hunting (ix) Fishing (x) Catching birds (xi) Playing cards (xii) Caronball playing (xiii) Horticulture (xiv) Chess playing (xv) Playing Table Tennis (xvi) Playing ringball (xvii) Novel reading (xviii) Painting (xix) Playing football (xx) Playing hockey (xxi) Driving car (xxii) Playing Cricket (xxiii) Book collection (xxiv) Playing Lawn Tenis (xxv) Kabaddi (xxvi) Music (xxvii) Javeline throw (xxviii) High jump (xxix) Long jump (xxx) Begadeli (xxxi) Boxing.

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