Background of the Study

In past independent India, great emphasis has been placed on mathematics teaching and learning the education commission (1964-66) recommended mathematics as a compulsory subject for students at school level. The commission seemed to have been influenced by international opinion at that particular time and favoured new mathematics which later pervaded secondary education. That was the era of sets and the algebra of sets.

In the teaching of mathematics emphasis should be more on the understanding of basic principles than one the mechanical teaching of mathematical computations'. Commenting on the prevailing situation in school it is observed that in the average school, today instruction still conforms to a mechanical routine continues to be dominated by the old be setting evil of verbalism and therefore remains as dull and uninspiring as before.

The NPE(1986) has also considered the importance of mathematics in general education and suggests that mathematics should be visualised as the vehical to train a child to think, reason, analyse and to articulate logically Apart from being a specific subject it should be treated as concomitant to any subject involving analysis and reasoning. In the recent past there have been tremondous development in theories of learning and the science of

teaching though maths occupied a place of importance, the researches in this area have been scarity.

Throughout the years there have been innumerable investigations on the relationship between personality and academic achievement. The results differ with the age group concerned and with Gender, with socio-economic class and with different intelligence as personality measures.

Parents, teachers and teachers - educators have become increasingly interested in the area of relationship between personality and achievement in school. There is growing awareness among all sections of educationists that the learning conditions that provide optimum opportunity for one pupil may not prove conducive to another pupil with a different personality structure.

One of the most important themes to be found in educational research, presently involves the attempt to unravel the complex determinants of academic achievement. Early works concentrated on intelligence as the explanatory variable. Educationists established that achievement and abilities are positively related. Variables other than abilities, which are distinct both empirically and theoritically, are also positively related to academic achievement. Subsequently, a wide variety of research reports have drawn attention to the importance of socio-economic factors and early experiences of children in the

home, society and cultural milieu. Environment affects both the development of intelligence and level of achievement. But any attempt to comprehend the complete casual change associated with academic achievement must include the effect of personality on the child's work and attainment in the school. There can be little question that the basic traits of a childs personality have a far reaching influence on his educational progress. The purpose of the present study is to make further identification of personality factors for the prediction of achievement in mathematics of urban & rural students.

B. STATEMENT OF THE PROBLEM:

Psychologists have been concerned with discovering which personality traits foster academic achievement. The present study is concerned with the relationship between personality trait and achievement in mathematics of VII class students. The objective here has been to take those aspects of education and personality which has been subjected to measurement, to see if consistent, orderly and systematic relations are present between personality traits and achievement in mathematics.

C. EXPOSITION OF THEORY UNDERLYING THE INVESTIGATION: PERSONALITY

a. Some theoritical considerations: Trait approach:

The term 'personality' is now-a-days used in

somewhat narrow and specialized sense to denote "the distinctive way in which any given individual's non-cognitive or dynamic tendencies are organised." (Burt 1965), i.e. the various affective and conative propensities which chiefly determine his interests, motives, preferences and indeed his whole social and personal behaviour.

Floyd Allport (1924) states that 'Personality traits may be considered as so many important dimensions in which people may be found to differ." This seems to be inclusive. For example, it includes physical dimensions which have only indirect importance for personality Elsewhere he offers a more useful formulation, "Personality is the individuals' characteristic reactions to socia stimuli and the quality of his adaptation to the socia features of his environment."

Gordon Allport (1937), found a difinition in term of intervening variables to be essential. According t him" Personality is the dynamic organization within th individual of those psychophysical systems that determir his unique adjustment to his environment." This definitic recognises non-static nature of personality, (a dynami Organisation). It focuses on inner aspects rather tha superficial manifestations; but it establishes the base for the social stimulus value of personality, (Uniq adjustment to the environment). While it is not possib

to study directly a 'dynamic organisation' within the individual. "This definition is consistent with a thorough going scientific approach based upon appropriate research techniques.

A lay man observes certain characteristics in human behaviour which are more or less enduring and stable dispositions pervading the whole range of his behaviour. This common man's observation became an experimenter's "hunch" to start with. Allport (1937, 1961) has tentatively defined the trait as 'a generalised and foculized neuropsychic system (peculiar to individual) with the capacity to render too many stimuli functionally equivalent, and to initiate and guide consistent forms of adaptive and expressive behaviour. In general the traits as the qualitative aspects of personality with quantative variations on a given dimension from individual to individual were conceived as measurable. A trait can not be observed but inferred; can not be conjectured but discovered.

Central to Eysencks' view of behaviour also are the concepts of 'trait' and 'type'. He defines traits very simply as an "observed constellation of individual actio tendencies." In other words, a trait is simply an observe consistency among the habits or repeated acts of th subject. A type is defined as an" observed constellatic or syndrome of traits. Thus the type is a more generalise

and inclusive variety of organisation and includes the trait as a component part. Eyesenck defined personality as- ".....the sum total of the actual or potential behaviour - pattern of the organism as determined by heredity and environment, it originates and develops through the functional interaction of the four main sectors into which these behaviour patterns are organised: the cognitive sector (intelligence), the conative sector (character), the affective sector (temperament) and the somatic sector (Constitution). (Eysenck 1947).

Eysenck (1947, 1969) regards introverts and extraverts as the basic personality types who differ from one another in a large number of personality traits. He regarded introversion - extroversion (I-E) and neuroticism (N) as two basic dimensions along which neurotics and normals differed. Cattell considers that the detailed task of defining personality must await a full adumbration of the concepts that the theorist plans to employ in his study of behaviour. In terms of Cattells' emphasis on taxonomy it can be expected to find considerable attention given to the structure of personality. The basic structural element for Cattel is the trait. For him a trait is a "mental structure" an inference that is made from observed behaviour to account for regularity and consistency in his behaviour. A trait represents a broad reaction tendency. There are a variety of kinds of traits. There are trait

common to all people and traits that are unique to individual. There are traits that are constitutional determined and traits that are environmentally determine Among the many possible distinction between trait according to him two are of particular importance. T first important distinction is between surface traits a source traits. The second among ability trait temperament traits and dynamic traits.

Central to Cattell's point of view is tl distinction between surface traits, which are cluster c manifest or overt variables that seem to go together, ar source traits which represents underlying variables tha enter into the determination of multiple surfac manifestation. Thus if one finds a number of behaviora events that seem to go together he may prefer to conside them as one variable. In a medical setting this would b referred to as syndrome, but here it is labelled as surface trait. Source traits, on the other hand, ar identified only by means of factor analysis which permit the investigator to estimate the variables or factors whicl are the basis of the surface behaviour. (Hall and Lindzey 1957).

It is evident that Cattell considers source traits more important than surface traits. This follows not only because the source traits promise greater economy of

description, as there are presumably fewer of them, but more importantly because: ".....the source traits promise to be the real structural influences underlying personality, which it is necessary for us to deal with in developmental problems, psychosomatics, and problems of dynamic integration..... as research is now showing, these source traits corresponds to real unitary influences- physiological, temperamental factors, degrees of dynamic integration, exposure to social constitutions about which much more can be found out once they are defined," (Cattell 1950).

Surface traits are produced by the interaction o source traits and generally can be expected to be les stable than factors. Cattell admits that surface trait are likely to appeal to the common sense observer as mor valid and meaningful than source traits because the corresponds to the kinds of generalizations that can b made on the basis of simple observation. However, in th long run it is the source traits that proves to have th most utility in accounting for behaviour.

Clearly, any single trait may represent th outcome of the operation of environmental factors, c hereditary factors or some mixture of the two. Cattel (1950,1951) suggests that while surface traits mus represent the outcomes of a mixture of these factors it at least possible that source traits may be divided int

those that reflect heredity, or more broadly, constitutional factors. The traits that result from the operation on environmental conditions are called environmental mold traits, those tha t reflect hereditary factors are called constitutional traits.

The distinction among ability, temperament and dynamic traits resembles the traditional distinction in psychology among cognition, affection and conation. (Horn 1966). the cognitive realm of behaviour relates to thinking. In Cattell's terms these are ability traits. A ability trait is seen in behaviour in situations that var in complexity. The affection realm of behaviour relates t emotion. In Cattell's terms these are temperament o stylistic traits. These traits come closest to what on generally thinks of as personality and tend to b relatively independent of specific situational factors Finally realm of conation relates to motivation. I Cattell's terms these are dynamic traits. Dynamic trait are seen in behaviour in situation that vary in incenti that is in situations that contain goal objects that a associated with pain or pleasure in relation motivational states.

Cattell's basic concern is to establish sour traits. When factors are independent of one another th are referred to as orthogonal factors. Cattell's facto

representing source traits are not independent of one another and are referred to as oblique factors. Orthogonal factors are uncorrelated, where as oblique factors are corelated with one another. Cattell's preferences for oblique factors are largely empirical. They lead to easier psychological interpretations and according to Cattell, are probably truer to nature than are orthogonal factors.

b. Questionair approach to personality testing:

Among the various techniques of measuring personality comprising adjustments, interests, attitudes, temperament abilities and constitutions, the questionnaire approach still enjoys wide popularity.

A personality questionnaire is essentially a standardised interview. It is a common experience that an individuals written account of his past behaviour, feelings and wishes obviously constitute and important due to his personality.

A general survey of existing personality questionnaires indicates that they can be broadly classified into three categories according to methodology they adopt for appraising personality-

(i) Unidimensional approach

(ii) Multidimensional approach

(iii) Multivariate approach

(i) Unidimensational Approach:

A unidimensional approach is one that provides an index that can be vary back and forth on just on a linear variable. The primary advantage of this method is the clear understanding of one's part of just what it is one is measuring.

(ii) Multidimensional Approach:

A multidimensional approach to the measurement of personality means simultaneous use of two or more unidimensional approaches. Multidimensional approach denote the use of one set of items scored in different ways to give rise to measurement on several personality traits.

(iii) Multivariate and Factorial approach:

Multivariate methods are distinguished with univariate method first by treating many variables at onece, and taking care to look at the totality of manifestations simultaneously and holistically. Secondly they differ by not requiring manipulative control, but allowing things to happen in nature as they normally happen, without attempting to control them artificially in any way.

Factor analysis is only one such statistical model which unravels the fundamental variables of personality.

Cattell's approach:

This method has been utilized in the present study. The approach of R.B. Cattell in this field of application of factorial methods for the purpose of obtaining basic variable of personality differs from earlier investigators. In fact his work is undoubtedly the most thoroughgoing attempt that has been ever made to utilize factor analysis as means of charting the entire structure of personality, with suficient theoritical background to support his claims.

He has pointed out that personality can be defined only in terms of the fields with which it is concerned "Personality is concerned with and deduced from all the behavioural relations between organism and environment "(Cattell, 1950) The attributes by which it is measured are described are traits (structures of dispositions defining potential behaviour) which may be considered as properties of the organism, but which can only be defined in terms of both the organism and its environment.

In order to arrive at a comprehensive description of personality, Cattell (1946) in collaboration with Odbert, assembled 4000 to 5000 personality trait names occuring either in dictionary or in psychiatric and psychological literature. This list was reduced to 1 descriptive concepts by eliminating over-lapping concep

which were synonyms. The 171 traits list was then employed in obtaining "behaviour rating" on a group of 100 adult subjects on the basis of intercorrelations among these ratings the traits were combined into 35 "Nuclear Clusters". Ratings by 208 men by two dependent raters were next obtained for each of 35 traits. A factor analysis among the 35 traits ratings led to a further reduction and in all 12 factors were identified. These, he has mentioned, as primary source traits of personality.

These source traits are empirically derived through three major approaches to personality measurement. The life record (L-Data), the self-rating (Q-Data) and the objective test (T-Data). Cattell's method of identifying and classifying source traits is entirely statistical and logical. His system make use of correlational techniques For relating the behaviour of different people in a variety of test situations (Cattell 1956). In this way it is possible to study inter-individual relationships in different test situations. Intraindividual relationship on the same test situations and inter-test relationships o the same individuals. By means of factor analysis of thes kinds of inter correlations, various traits may b isolated. The essence of the definition for each trait i a list of items or measures that are most loaded with particular factor, that is the items to which that factc contributed most. Thus one of the goals of this factoria

is to eventually establish the minimum number of 'Factors' which will account for all the variability in personality. As a result of these investigations, Cattell has been able to develop a number of objective personality tests for measuring the principal source traits or factors (Cattell 1954; Cattell and Bellof 1953@ 1968; Cattell and Stice, 1957, 1962) These source traits promise to be real structural influences underlying personality and have emerged in the form of sixteen personality factor questionnaires for a fuller description and measurement of personality dimensions.

D. PURPOSE OF THE PRESENT STUDY:

Based on the above premises, the following purpose of the present study have been delineated.

To find out the relationship between the personality traits and achievement in maths of VIII class students.

The main objectives of the study were:

(i) To study the areawise achievement of the sample.

(ii) To study the genderwise achievement of the sample

(iii) To study the personality factors of rural pupil.

(iv) To study the personality factors of urban pupil.

(v) To study the relationship between achievement in maths and personality factors of the rural & urban students.

E. HYPOTHESES

The present study took up the following hypothesis to be tested:-

(i) There is no significant difference in the achievement of the pupil from urban & rural area.

(ii) There is no significant difference in the achievement of boys & Girls.

(iii) There is no correlation between different traits of personality and achievement in mathematics of rural students.

(iv) There is no correlation between different traits of personality and achievement in mathematics o urban students.

F. DELIMITATION

The scope of this study has been delimited by th following considerations -

(i) In view of the great diversity of factors whic are presumed to be operating in the field c academic achievement and diversified course available at the Secondary stage in India, th present study was confined to the achievement i

mathematics, due to limited time and resource available.

(ii) The study is confined to the students of clas VIII only and between age group 12-14 years.

(iii) The field of operation was confined to the fou schools each of Bhopal & Shahdol district.

(iv) The number of students included in the sample wa limited to 200.

Variables involved in the study:

The various dependent and independent variable involved in the present study were as follows:-

(i) Dependent variables: achievement in maths.
Independent variables: personality.

Achievement: Scores obtained by the students in the te: paper is taken as achievement of the students.

G. IMPLICATIONS OF THE PRESENT STUDY:

The present study provide an empirical basis the counsellors, teachers and educational administrato for determining which personality traits are relat specifically to the achievement in mathematics .