CHAPTER-II

THEORETICAL VIEW POINTS ABOUT PREDICTORS
CHAPTER II

THEORETICAL ViewPOINTS ABOUT PREDICTORS

In the present chapter, theoretical viewpoints about the predictors under consideration are presented in details so as to get the complete understanding of these variables and the rationale of the relationship of these variables with the emotional maturity of adolescents.

2.1 INTELLIGENCE

Butcher (1968) identifies five main causes for different concepts of Intelligence:

(1) The research into original, 'creative' or 'divergent thinking' was made the basis for contrasting it with the 'analytic' or convergent kind of thinking studied in the past and assessed by conventional kinds of intelligence tests. The former was known as creativity and latter as intelligence.

(2) Psychologist Piaget (1950) introduced a novel approach to study intelligence. By observing children's process of thinking from the detached viewpoint of a biologist, Piaget discovered many previously unsuspected basic differences between the concepts of children and of adults. Accordingly, nature and functioning of intelligence was believed to be changing quite radically from one age to another. Former intelligence, as displayed and exercised by adults, works in a different manner and make use of different kinds of concepts.
from concrete intelligence (typical or mild childhood) and is still more different from sensory motor intelligence, which is all that is available to young infant.

(3) The computer revolution has made intelligence to denote little more than the complex of performances which we happen to respect but do not understand (Minsky, 1963).

(4) The liberalised neo-behaviourism has attempted to describe and explain even the most complex and abstract human thinking in terms of simple mechanism, whether these operate by chains of stimulus - response connections, by feedback loops or by other kinds of elements. As such many experimental psychologist and cyberneticists argue that 'intelligence' is a cloak for our ignorance of the mechanics of thinking and little else.

(5) The most influential factor in changing attitudes to the study of human intelligence has been growth of educational sociology. This view has emphasised environmental influences to the neglect of hereditary factors and the common features and mutual influence within social groups.

Thus, it has been seen that intelligence is an example of a multi-definable concept. The following observations on the nature of intelligence, made by various eminent authorities bring into sharp relief the force of our present contention.
Binet (1916) defined intelligence as the ability, "to judge well, to comprehend well, to reason well, practical sense, initiative, the faculty of adapting oneself to circumstances."

Intelligence, as given by Terman (1921) is, "the ability to carry on abstract thinking".

Burt (1937) defined intelligence as, 'innate general cognitive ability'.

In Wechsler (1943) words, "Intelligence cannot be separated from one rest of the personality". According to him, "Intelligence is the global capacity of an individual to act purposefully, to think rationally and to deal effectively with his environment".

According to Piaget (1950) "... behaviour becomes more intelligent as the pathways between the subject and the objects on which it acts cease to be simple and become progressively more complex".

As given by Raven (1958) "In order to act intelligently in any situation, a person needs both the necessary information and the capacity to form comparisons and reason by analogy".

Thus, there are two extreme views between which 'intelligence' has been conceptualised - the open view and the narrow operational view. The open view is related with the popular or common sense concept, whereas the operational view allows for a scientific precision and loss of some of the rich and the polymorphous aspect.
Vernon (1960) classified description of intelligence as biological, psychological and operational. Freeman (1962) divided them into those emphasising (i) power of adaptation to the environment, (ii) capacity for learning and, (iii) ability for abstract thinking.

Thus, intelligence is confused with learning, thinking, problem solving, concept formation, attainment and achievement. It is none of these but it affects them all in positive way, that is, it improves performance the concept has caused considerable controversy in recent years and there are two main reasons for this: firstly intelligence is thought to be connected with achievement and is, therefore, important in our society and educational system; and secondly, some people are thought to be more intelligent than others. Such as apparently, unequally distributed yet desirable attribute is naturally of interest to people concerned with the individual development.

Considered in historical perspective, it may be useful to summarise the concept of intelligence developed during the last eighty years or so into four groups:

(1) Intelligence conceived as product, such a conception is to be associated with the pioneers in the field such as, Galton (1874), Binet (1916) and Burt (1937). The latter defined intelligence as "innate general capacity" one of the implications of such a definition was that, intelligence as defined, differs from intelligence as measured by tests.
ii) Intelligence conceived as possession. The view of intelligence is represented by Spearman (1927), Thurstone (1938), and Guilford (1956). Thus, Spearman observed that every test score combines general ability, 'g' which is common and consistent across all the tasks an individual performs and a specific ability 'S', which is specific to the test. According to Thurstone (1938) intelligence implies seven primary mental abilities - memory (M), number (N), perceptual speed (P), reasoning (R), space (S), verbal (V), and world fluency (W). Guilford constructed a model of intellectual based on principles and suggested that there are 120 possible independent abilities.

(iii) Intelligence conceived as process. The advocates of such a view of intelligence are Piaget (1952) and Wretheimer (1945). For them intelligence is a dispositional concept and an attribute in the same sense as 'tall' or 'Indian' on 'born in 1930'. They suggested that while speaking of intelligence, it would be better to talk of 'a general tendency in an individual to perform a wide variety of tasks 'intelligently' bearing in mind that some tasks may serve much better than others as indicators of this disposition.

According to Piaget (1952) intelligence involves 'essentially a system of living and acting operations, that is, a state of balance or equilibrium achieved by the person when he is able to deal adequately with the data before him.
For Wretheimer (1945) intelligence is arrived at by direct apprehension of the structure of a problem and it may be defined as 'the ability to respond in present situations on the basis of anticipation of possible consequences that ensue. One's intelligence so defined, consists of the number and quality of one's insights differentiations, generalization and structurizations of one's life space. Within this frame of reference, successful behaviour rightfully may be intelligent only when a person might have done otherwise and his actions were premised upon his envisioning what he/she was doing and why (Biége, 1976).

iv) Intelligence conceived as a judgement. In terms of this view, intelligence implies a kind of judgement about one's performance. Such a notion of intelligence has been recommended by Jensen (1969) and Hudson (1966). The former assumes that intelligence is heritable whereas the latter provides a scheme of dividing people into groups convergers and 'divergers'. Hebb's distinction between 'intelligence A and intelligence B' on Cattell's Fluid and crystallised intelligence provide a picture of intelligence in terms of some kind of judgement. Thus, one kind of intelligence is thought of as genetico potentiality, on the basic, given qualities of the individual's central nervous system, and other kind as mainly the result of experience, learning and environmental factors. However, most experts are of the opinion that all tests of intelligence measure an indissoluble mixture of intelligence A and
intelligence B (or fluid and crystalized intelligence) and that any differences are ones of degree rather than of kind, and that is impossible to assess genetic potential uncontaminated by the effects of experience.

Theories of Intelligence:

As far as theories of intelligence are concerned, Spearman (1927) identified three kind of theories of ability. The monarchic, the oligarchic and the anarchic. The monarchic view would imply truly 'one factor' theory, with general intelligence supreme, and equally important in every cognitive task; the oligarchic conception would mean that there are several large ability factors of roughly equal influence; and the anarchic view would make every task depend upon its own specific ability.

Thus Spearman's (1927) two factor theory may be considered as the refined version of the monarchic type, with the condition that general intelligence enters into different tasks in different degrees. It may also be further noted that British psychologists like Spearman and Burt have supported the monarchic view of intelligence, whereas, American psychologist like Kelley, Thurston and Guilford have laid stress on the oligarchic or anarchic view.

According to Spearman's (1927) theory of intelligence, the structure of ability consists of two factors—general factor called 'g' and specific factor called 's'. He linked 'g' to general mental energy, equivalent to physical energy and therefore, dominant. It
implies that such a factor is innate and unchangeable. The 'S' factor is energized by 'g' and is capable of modification under different environmental conditions such as formal education. The degree to which tests differ in their saturation of 'g' is quite substantial, being very high in the case of verbal reasoning compared with say music or mechanical ability.

The theory of intelligence as presented by Thurstone (1938) is oligarchic in nature and described as Multiple Factor Theory. He introduced a new principle, which he called 'simple structure', such a principle was developed from an institute, belief that, in a large and representative set of mental tasks, ability will be involved that greatly facilitate some of the tasks but have no effect on others.

Thurstone conducted his first research using 56 different tests ranging from 2 to 20 minutes in length. These tests were administered on 240 students and through the technique of factorial analysis, he identified seven main factors with two more provisionally interpretable. The seven factors were:

S - Spatial ability
P - Perceptual speed
N - Numerical ability
V - Verbal meaning
M - Memory
W - World fluency
R - Inductive reasoning.
In further studies with young children, not all of these factors were found. A new factor called 'motor factor' was identified and the memory factor was dropped. In the final version of tests used in studies, three age groups were set up and following set of factors was measured:

Age 5-7       V, P, S quantitative motor
Age 8-11      V, P, S, R, N
Age 12-19     V, S, R, N, W

Thurstone used the word 'Primary mental abilities' but the same was found to be misleading because the factors are in no way psychologically basic or area they physiologically established.

Vernon's (1950) Hierarchical theory of intelligence has raised a note of caution against taking the structure too literally; for example minor group factors have not always been found to be direct descendants of the two broad group factors:

Verbal : educational (V : ed) and
Spatial-mechanical (K : M)

According to this theory, the structure of human ability may be thought to follow the Hierarchy, as given in the figure:

General Ability

Verbal, Education  Spatial Mechanical

Figure: Figure showing the Hierarchical Structure of Human Ability (Vernon 1950)
The most popular approach to describe the structure of ability is represented by Guilford’s (1967) model of structure of Intellect. He classified possible kinds of ability under three heads. In terms of this model, abilities may vary according to (a) one basic psychological processes involved, which are cognition, memory, evaluation, divergent product and convergent production; (b) the kind of material or content, such as symbolic (e.g. letters, numbers and words when meaning as such is not considered), or semantic (meaningful material, particularly verbal); (c) the forms that information takes in the course of being processed, such as classes, systems, relations or transformation. Thus, the possible processes or operations are five, the kinds of content four, and the kinds of product six. Since these are independent cross-classifications, this system yields a large number of possible different abilities i.e. $5 \times 4 \times 6 = 120$. The model illustrated by the cube in following figure is three-dimensional and comprises 120 cells representing independent abilities.

![Diagram of Guilford's Model of Structure of Intellect](image-url)
The operation, product and content as represented by this model and as described by Guilford are:

**OPERATION:**

The types of operation performed are five kinds of mental processes.

- **Cognition (C)**: Discovery, rediscovery or recognition of information.
- **Memory (M)**: Recalling information retention.
- **Divergent Production (D)**: Searching for possible solutions and varieties of thinking-broadening out and opening up.
- **Convergent Production (N)**: Single correct answer as in conventional thinking.
- **Evaluation (E)**: Making decisions about the adequacy of information.

**PRODUCTS**

The resultant form into which information is processed consists of six products of the above operations.

- **Units (U)**: Varying from a simple product.
- **Classes (C)**: Making classes.
- **Relations (R)**: Making relations.
- **Systems (S)**: Making systems.
- **Transformations (T)**: To change the idea.
- **Implication (I)**: To a complex Product.

**CONTENTS:**

This refers to the material on which the mental operations are performed. There are found kinds of
contents in which mental processes operate.

**Figural F** Concrete material perceived through the senses, spatial and linear relationships.

**Symbolic S** Letters, digits and conventional signs.

**Semantic M** Meaning of words and ideas.

**Behavioural B** Non-verbal understanding of human behaviour and interaction or "Social intelligence".

However, Cattell's (1971) theory of intelligence maintained that intelligence is neither completely monarchic nor anarchic in nature. In a way, Cattell suggested a compromise between 'one factor' and multiple factors' theories on the structure of abilities. He considered 'general intelligence' to be important but believed that this is best reached and assessed as a second, order factor via Thurstone's primary mental abilities. He made a distinction between two kinds of general intelligence fluid and crystallised. The former is abbreviated as 'gf' and the latter as 'ge'. The crystallised general ability (ge) is defined as indicated by those cognitive performances in which habits of skilled judgement have become crystallised from the application of some prior, more fundamental general ability to these fields. The fluid general ability (gf) appears more in tests requiring adaptation to new situations whereas crystallised skills are of no particular advantage.
Academic achievement has been considered a vital factor in life and is the most important goal of education. Ours is an age of competition. In our rapidly changing society and world with the advancement of science and technology, the people have become educational minded. Every parent sets high goals towards his child. At every step in life, academic record speaks for individual. At the time of admission, for entrance of a job, for scholarship and for further studies, good academic result is the only recommendation. So used in the broad sense of educational growth, the term academic achievement refers to the acquisition of all the behavioural changes associated with cognitive, effective and psychomotor Domains. But in the context of school situation, it refers to the achievement made by the pupils in their subjects of study. It is the accomplishment or proficiency of performance in a given skill on body of knowledge. It can also be visualised as "status on level of a person's learning and his ability to apply what he has learnt" (Pressy, Robinson and Harrock, 1957). This definition conveys only a narrow meaning of the term achievement. There is, however, a much broader approach which includes attitudes, interests and values as aspects of achievement. The achievement is considered to be the product of learning, attitudes and interests because they are learned, acquired, retained and forgotten just as knowledge and skills are. Thus, achievement means a person's level of skill or
range and breadth of information and what he has accomplished in a designated area of learning or behaviour.

Webster opines (1963), "Academic achievement is the performance by a student in a course based on formal study in an institution of learning."

Theoretically, achievement has two aspects - absolute and relative. In absolute terms, the marks or grades earned by a pupil or assigned to him by the teachers on the basis of his written or oral (test) performance in a particular situation are taken as measure of his absolute achievement. An absolute measure, however, is only a myth. When a learner's written or verbal response on answer to a question is judged in terms of marks, the teacher is consciously or unconsciously comparing the response to some other response, may be of other learner or learners or a response given in a book or the one in the teacher's head or his expectation.

According to Crow and Crow (1956), "achievement means the extent to which the learner is profiting from instruction in a given area of learning". While Good (1973) considers it as "knowledge attained or skill developed in the school subjects, usually designated by test scores or by marks assigned by by the teachers." Travers (1959) in his book, 'How to make achievement tests' writes that term achievement refers to any desirable learning that occurs. It implies value judgement, it is obvious that whether a particular learning is referred
to as an achievement or not, depends upon what some body consider is desirable or not.

Academic achievement has always been the centre of educational research, as it is one most important goal of education. Trow (1960) defines academic achievement in "Psychology in teaching and learning" as, "the attitude, ability or degree of competence in school tasks, usually as measured by standardised tests and expressed in age or grade units based on norms derived from a wide sampling of pupil's performance".

The definition given in a preceding paragraph indicate that there is substantial agreement among the authorities regarding the nature of academic achievement in as much as all of them place emphasis on knowledge attained or skills developed in the academic subjects. Biswas and Aggarwal (1971) and Good (1973) also emphasised these aspects. The level of academic achievement of pupils is most commonly interpreted in terms of academic or educational age or test scores.

Academic achievement is a complex and multidimensional phenomenon. It is a product of the interaction between several factors operating in the pupil, such as abilities, motivation, interest and attitudes and a complicated set of forces operating in functional set-up of the school. According to Kerlinger (1973), "It is an abstraction formed from the
observation of certain behaviours of children. These behaviours are associated with the mastery or learning of school tasks - reading words, doing arithmetical problems, drawing pictures, and so on. The various observed behaviours are put together and expressed in a word-achievement."

There are several grounds that justify the measurement of scholastic or academic achievement.

Its measurement is justified due to two fundamental assumptions of psychology. First, there are differences within the individual from time to time, known as behaviour oscillations, which account for differences in the scholastic achievement of the same individual from time to time and from one educational level to another. Secondly, individual of age the same/group, same grade and of the same potential ability usually differ in the scholastic achievement.

Apart from this, continuous appraisal of academic achievement is now being increasingly pleaded since all education has become achievement-oriented. High achievement is considered as one of the primary goals of education since it has come to be recognised as a strong basis for ambition and progress. Achievement encompasses enhancement, "self-actualization" and Maslow would say, self improvement and some forms of competition. High achievement in school, therefore, builds self esteem and self-confidence which lead to better adjustment in life.

Research evidence indicate that success in academic
achievement acts as an emotional tonic and any harm done to a child in the home or neighbourhood may be practically repaired by the success in the school or college which builds self esteem and self confidence and leads to better adjustment with other groups.

Academic achievement of the students is the most cherished concern of parents and teachers, in our culture.

In view of the importance of education and academic achievement, it becomes necessary to identify factors which differentiate or effect the individual in the level of achievement. The level of achievement can be attained to different levels of respectivity between individual and their ability to demonstrate the proficiency attained by them from the instructions imparted to them. The difference in the respectivity on ability to display the talent of skills would depend on factors which are inherent as also which influence the individual's interaction to the system of education at college.

The factors can be psychological factors which include intelligence, learning ability, aptitude, study habits, emotional maturity and aspiration etc.

The environmental factors which also influence/affect the achievement level of students are socio-economic conditions, educational facilities, examination system, personality of teachers and also psychological environment at home and school etc.

2.3 ENVIRONMENTAL CATALYST

Environment has become a matter of great interest and
concern not only for the environmentalists and ecologists but also for the psychologists who study emotional reactions in human beings in relation to the changing environmental conditions.

Environment means all that is found around the individual. Environment stands for all those circumstances, which are asserting their influence on the individual since conception to death. Our innate abilities are also modified by the circumstances, consciously or unconsciously environment moulds the behaviour and the personality of the child. Generally, the main aspects of environment are:

**Physical environment** - includes food, athletes, temperature, climate, home and school buildings etc.

**Intellectual or mental environment** - includes books around child, libraries, laboratories, radio, museum, intellectual tastes and interests of the parents, recreation rooms and associations.

**Social environment** - means parents, members of family, relatives, playmates, friends, neighbours, teachers and the society at large.

**Emotional environment** - It consists of emotional nature of parents, friends, relatives and teachers etc.

Anastasis' view (1958) of environment is more complex. She views environmental influences of two types: organic and behavioural factors. Behavioural factors are those which directly influence the behavioural outcomes and organic factors
are those produce influence on behavioural outcomes indirectly by contributing directly to the human organisms. "The environment is everything that affects the individual except his genes" — Boring, Longfield and Weed (1961).

As given by Webster's Dictionary (1966), "Environment is, the surrounding conditions, influences or forces that influence or modify as the whole complex of climatic, edaphic and biotic factors that act upon as organism on an ecological community and ultimately determine its form and survival."

Baum et al. (1982) have the different aspects of environment, which give the different and unique explanation of the environment as:

In case of adaptation: physical qualities inter-personal interaction, information etc.

Opportunity structures: Temporal and spatial structures of land uses, services, facilities.

Socio-cultural forces: Socially/culturally defined settings and systems.

Historical: Constraining/enabling residue of human interaction with other paradigm.

According to Colinvaux (1982), "The term environment includes the observable physical, biological, historical and social milieu and in which man lives. Thus, environment is a set of relationship between man and nature". Graphically, it
may be represented by three arms of a triangle labelled as physical, biological and sociological components interacting with each other and influencing the non-material attributes man such as ethics, aesthetic and techniques.

In the views of Withall (1979), "environment encompasses the emotional tone which is concomitant of interpersonal interaction. It is a general factor which appears to be present in interactions occurring between individuals in face groups."

The environment is composed of visible and invisible elements. A Brazilian scientist's definition of environment is worth quoting, that the environment is not only the sum of all the material things that make up the mosaic of the countryside of landscape and constantly interact with each other. It is much more than this. It also includes the economic structures and outlook and habits of people in different parts of world. The environment, as a whole, therefore, includes not only physical or material factors but economic and cultural ones as well. An accurate analysis of environment must always consider the total impact of man and his culture on all and every aspect aspect of human life. Viewed in this perspective, the environment includes biological, physiological, economic and cultural aspects, all linked in the same constantly changing ecological fabric.

Catalysts

As defined by Webster's Dictionary (1966), "catalysts is a substance that brings about catalysts and that may or may not actually take part in the process."
So, the catalyst is an agent which generally make the process speedy in nature. Chemically, the catalysts are classified as: (1) Activator: fastens the reactions, and (2) Inhibitor: which retards the growth and speed of reaction. Similarly, the catalysts which are present in the environment can activate as well as regard the process of growth, behaviour and learning of an individual.

Environmental catalysts is a complex term to define. Since it is new introduction in the field of research and psychology so it is difficult to present a huge amount of theoretical content on this term.

Environmental catalysts like the factors of environment consists of the emotional, physical and intellectual climate that is set up by the teachers, parents and students, which affect the teaching and learning process. So, these are the factors present in the environment, which affects the quality and quantity of learning done by the students. These factors can be home, school, society, personal attributes, socio-economic status and psychological environment.

Ahluwalia (1970) used the term as the nature and extent of change in the professional attitude of pupil-teachers which is perhaps catalysed by the teacher educational programme (in a study of Teacher trainees).

For the purpose of present study, this term is explained by the nature, growth and extent of change in the emotional maturity of adolescents which is perhaps catalysed by the home, school, environment, personal attributes, SES and psychological environment.