Chapter I
INTRODUCTION
CHAPTER-1

INTRODUCTION

Cognitive psychology deals with questions about how people learn, store and use information. Cognitive psychologists are interested not only in specialized knowledge, but in knowledge in the broadest possible sense; How do you understand the meaning of words? How do you recognize a friend's face? How do you remember how to climb stairs? All these activities involve knowledge of one kind or another. All of us have a vast amount of knowledge. It is stored in the form of mental representations that stand for or symbolize external objects or relationships. These mental representations are based upon our perception of the external world. Perception does not, however give direct knowledge of the world and we shall see that perception is an active process that involves constructing a model of the world rather than a passive reception of an exact copy of external reality. Perception itself is a mental representation. It corresponds to patterns of firing of neurons in the brain rather than to a copy of reality that somehow finds its way into the brain. Our perceptions are determined as much by the way our mind works. Cognitive psychologists approach their discipline from a basically scientific perspective. They view the human mind as a calculation device, albeit somewhat imprecise and error prone. They adopt a model of human mind as a system for processing information.

The human mind works somewhat like a computer. It has a central processing unit that operate serially i.e. it does one thing at a time. It does the things very quickly and in fact, operates about a million times faster than the average neuron but there are certain tasks, for example, perceiving and understanding a visual scene, where the brain performs much faster than a
computer. The brain is more like a large number of very slow computers, all operating in parallel at the same time and dedicated to a fairly specific task.

A neural network or parallel-distributed model of cognition is aimed at explaining how and why we experience mental phenomena. For this purpose, such a model is not different from information available to them. The information, a person has to work with at any moment, comes from mainly three sources, which are given under:
(a) His circumstances including some focal stimulus.
(b) His memory wherein resides information about past experiences and functional skills.
(c) The feedback he receives as a consequence of action, information which is derived partly from sensing one's own movements and partly from the reaction of one's social and nonsocial environment.

Information takes time to be processed. During processing, information may pass through several stages. The functions of information processing system are (i) orientation, perceiving and storing knowledge (ii) retrieving knowledge as required (iii) encoding relationships between events (iv) attending to stimuli from outside the system and those generated internally (v) scanning the relevant identifiers of external stimuli in permanent memory (vi) maintaining and focusing attention on relevant stimuli and filtering out others (vii) testing the output of integrating subsystem prior to emitting signals. There are mainly three sub-systems of information processing (i) attention (ii) memory (iii) response process control.

Attention is the indispensable functional mediator of all the cognitive processes where the stimulus is first received and perceived and then processed as
short and long-term memory. Therefore and thereafter memory also becomes indispensable component in any information processing system, which stores information that has been transmitted from other components, which have already processed and utilized it. Response process control is an important sub-system of information processing system. The overall response to a stimulus depends upon the stimulus been filtered, scanned, processed and then integrated into the response. The response process control ultimately decides the selection of best response.

Thus, whatever one's present circumstances, his reaction will be governed by an interaction of input from environmental and internal sources. But performance cannot be characterized as a simple reaction to external or internal events but more to human behaviour. There are other processes involved in making use of available information. Human beings have the ability to go beyond the specifics of a situation and to react in a more expansive and general sense. Some of these processes are:

Constructive processes:

Usually when we are asked to describe on experience or to explain what we remember of a story or a chapter we have read, our response is not simply a reproduction of the original experience. Performance in such circumstances is partly constructive. Some specifics of the experience are remembered, to be sure, but these are typically just fragments. Originally there is a necessity to fill in the gaps so as to make connections between these fragments. The connections are constructed, primarily on the basis of one's general knowledge of the world—that is, a person's understanding of the circumstances and one's skills of inference. Remembering one or a few things allow to induce or deduce what other things are
likely to have happened. Thus, performance in the current situation is a product of how the current situation is sensed, what re-collection one has depends on previous similar circumstances, and once ability to construct alternatives for behaving which are sensible (inferable) from these two informational inputs.

Concept Formation:

One kind of inductive process, called concept formation is basically a classification device. Early in life, for example we encounter many different people who are nevertheless alike in that they form a category clearly distinguishable from known people. Likewise, we encounter different types of animals and learn to classify them as dogs, cats or birds. Later in life, categories become more complex, so that we begin to understand what the furniture, professions, religions and the like means. The process of concept formation affords some economy for memory and for behaviour in the sense that, in most circumstances, instance of the same category can be treated identically and need not be distinguished.

Reasoning:

Mind is not simply an inductive device. It also works in a deductive way. That is to say, we can use our knowledge of the world for making decisions about what must logically be the case given the circumstances. If all A's are B's and all B's are C's, then it is logically (deductively) true that all A's are C's. Although the mind is subject to certain no logical operations, the use of reasoning and deduction is one way we have of predicting our own or other's behaviour from fragmentary memories of previous events.
Other Processes:

There are other high-level cognitive processes of which the mind is capable. Among them are problem solving and decision-making. The human mind can be described as an information-processing system, and human behaviour is a consequence of such processing. The processing that occurs depends on but is not wholly determined by information input from the environment and from memory. Information represents the elements on which our skills operate to calculate possible and sensible forms of behaviour.

Characteristics of information-processing approaches:

Several assumptions prevail in information-processing research that define a commonly shared, if minimal view of this perspective. We begin with assumptions about human cognition generally, and then we turn to an assumption about development. The main approaches of information processing are:

Core assumptions:

1. Cognitive phenomena can be described and explained in terms of mental processes and representations that intervene between observable stimuli and responses. Information processing is primarily an approach to understanding cognition, which might be defined in its broadest sense as consisting of psychological acts of knowing. The fundamental notion is that acts of knowing are best understood in terms of mental mechanism and representations. More specifically, information-processing theorists assume that information is represented internally and manipulated in real time by mental process. Researchers
seek to determine what types of information are represented, how information is coded and how it is organized. They also seek to identify specific processes and how they are organized in coherent and functional system. In principle research should lead to theories about architecture of cognition and can be used to explain regularities in human performance on a wide variety of cognitive tasks.

Characterizing human thought in terms of internal codes and processes is strikingly similar to describing the way in which computers process information, and the similarity is not at all accidental. Newell, Shaw and Simon (1958) were among the first to note that humans and computer engage in many similar activities. They must interpret symbolic information perform operations onto he interpreted information, and emit a response. Thus, humans like computer, can be considered as symbol manipulator. This insight lead to the view that computer based concepts can be used to represent important characteristics of human though, that the knowledge of computer operations can be used as a source of hypotheses about cognition, and that the computer programs can be used as a medium for representing theories about human cognition. (Kail & Bisanz. 1982b). Thus information-processing psychologists can use computer programs to describe and, to some extent, test their theories about human cognition and its development much as other psychologists have used verbal logical, or mathematical languages for description.

2. A relatively small number of elementary processes underlie all cognitive activity. Information-processing psychologist contend that, in principle, acts of knowing can be decomposed into distinct, component processes, which themselves can be decomposed even further. As a result, cognitive activities can be analyzed at many levels. For example, reading might be considered as a single process at one level of analysis, but at another level it might be viewed in terms of
such components as decoding and comprehension. These components, in turn, might be decomposed into even more fine-grained operation, such as specific memory-manipulation processes.

Years ago Newell and Simon (1972) wrote, "It is one of the foundation stone of computer science that a relatively small set of elementary processes suffices of produce the full generality of information processing". For example, the central processing Unit (CPU) for the most microcomputers enables users to analyze large data sets with complex statistical methods, to use electronic mail, and to write chapters, but it contains only several dozen basic instructions. Similarly, information-processing psychologist assume that the number of fundamental processes underlying human cognition is relatively small. There is little agreement as to the exact number of nature of these fundamental processes, but the ability and desire to identify them important goals of information processing research.

3. Individual processes operate in concert. The elementary operations of a computer become useful only when they are combined with other operations to form routines that may, in turn, be combined with other routines to form higher-order programs. The same is assumed to be true of human cognition, according to the information-processing view. A critical goal of research is to understand how fundamental processes are combined and organized to produce performance on different tasks. Moreover, it generally is assumed that higher levels of organization may have emergent properties that are qualitatively different than the properties of lower-level operation. A comparison of assumption 2 and 3 is instructive. Assumption 2 implies that searching for more microscopic is essential. Assumption 3, however, should make it clear that this sort of reductionism is not sufficient for a complete information-processing analysis. Instead, it is essential to
identify both elementary processes and the way in which they are organized to understand performance (Kail and Bisanz, 1982b)

4. Cognitive development occurs by means of self-modification. Information-processing theories consist of description of how a system of processes and information codes interact over time to account for observed performance. That is, the primary focus is on internal factors rather than external, environmental factors. Similarly, when information-processing psychologists seek to explain how cognitive system change, they focus on internal factors. The mechanisms that enable development to occur are assumed to be internal to the system itself, rather than imposed by the environment, and hence development is construed as self-modification. This orientation does not deny the importance of environmental events for cognitive change, but it represents the view that "whatever the form of the external environment, the information-processing system itself must ultimately encode, store, index and process that environment"

In psychology, we deal with living organisms and therefore it becomes very significant to study the process by which the information is processed. Although information processing has many sub-systems but the inspection time and attention processes are the most important of these.

Inspection Time (I T):

Inspection time is to date, the only single information-processing index that accounts for approximately 20% of intelligence test variance. The inspection time because of its much replicated correlation with IQ and its potential for theoretical tractability has more potential for our understanding of individual differences in cognitive ability rather than other indexes of human information-processing. All
the information-processing measures that have been studied to date. inspection
time has been shown to correlate reliably, more substantially and arguably, most
meaningfully with performance on standard test of psychometric intelligence.

IT is thought to measure some limitation in the speed by which information can be
taken in for processing and is defined as the lowest exposure duration at which a
subject can accurately and reliably make a perceptual discrimination
(Nettelbeck, 1987) IT is free of complexities inherent with response
and reaction time. Inspection Time (IT) is a construct concerned with the accuracy
of a subject in very simple discriminations. It gives an estimate of speed at which
an individual processes and responds to an initial stimulus prior to its registration
in short-term memory (Brand, 1984) we can understand IT more clearly with a
description of a typical inspection-time stimulus, often referred to as the Pi-figure.
It has two parallel, vertical lines, with one being longer than the other. The two
lines are joined at the top by a horizontal bar. There are two forms of this stimulus.
One has the long line on the right and other has the long line on the left. If asked
to indicate which of the two vertical lines is longer, this discriminative judgment is
performed perfectly by participants with adequate vision. The size of the vertical
difference between the two lines is designed to subtend a visual angle that presents
no discriminative difficulty. However, performance of this discrimination can be
made more difficult. First, the exposure time of the stimulus can be limited by
allowing a participant to view the lines for a limited period of time. As the
stimulus exposure time decreases, the participant’s accuracy in correctly
identifying the position of the longer of the two lines decreases, eventually to
prevent participant from processing information that is available in iconic storage.
After the stimulus has been removed, the presentation of the stimulus may be
followed by backward mask.
To estimate a participant’s inspection time, stimuli are presented in a random fashion (i.e., the long line has equal probability of occurring on the left or the right side) using a range of durations on each trial, a participant is required to state whether the long line appeared on the left or on the right. There are no requirement to respond quickly, and participants are encouraged make this response at their leisure. This is an important feature of the inspection-time task. In which only the correctness of the participant’s judgment is taken no measure of RT is required. A participant's inspection time is often expressed, as the exposure duration that was required for the participant to achieve a given level of accuracy e.g. 71% or 85%. Therefore, given that a number of participant’s can be tested under the same experimental conditions, the individual differences in the time required to view a simple stimulus to make a correct judgment can be ascertained.

It should be reemphasized that it is the stimulus duration required by the participant to reach a given accuracy level, that is assessed; inspection time has nothing to do with the speed of a participant's response in making the discrimination. Therefore, inspection time has been referred to as the "speed of intake of information." However, it is important not to confuse a performance measure like inspection time with a psychological construct; like mental speed.

Perhaps, then, three aspects of inspection time appeal to researchers who are interested in individual differences in cognitive ability. First inspection time appears to be a simple measure, involving fewer putative cognitive processes that RTs; for example, there is no movement time involved in inspection time, and the problem of speed-accuracy trade-off in RT does not occur in inspection time. Second inspection time may be seen as ubiquitous, because it can be conceptualized as a limiting factor for many higher mental operations in human thinking. Thus, it has the apparent generality of influence over other mental
processes that is necessary for inspection time to be considered as one of the bases of human intellectual difference. Third inspection time appears to offer the promise of theoretical tractability; that is, the measure is not only apparently simple and general, it is also embedded in a coherent theoretical framework in the field of perceptual psychology.

Attention:

Attention is the indispensable functional mediator of all the cognitive processes. Attention itself does not contain information, its actual function can be compared to that of a search light beam (Wachtel, 1968) which can vary on several dimensions i.e. intensity of illumination, width of illuminating beam, degrees of arc swept by the beam, number of halts or foci in a sweep, duration of focal illumination, number of oscillations across an information bearing field or any combination of these dimensions. The beam of attention is under the control of an operator and transmits information according to operator needs and instructions.

The concept of attention is an especially broad. It may refer to the clarity of consciousness, in an introspecting sense. It may also refer to the predisposition of the organism to concentrate upon one sensory modality or some one aspect of the modality, and screen out most of the remaining sensory input. Finally attention can refer to motor dispositions (sometimes called motor sets) that facilitate responding.

According to McDougall "Attention is merely conation or striving, considered from point of view of the effects on cognitive process."
The process of attention divides our field of experience into a focus and a margin. Events that we perceive clearly are at the focus of experience. Other items are perceived dimly; we may be aware of their presence but only vaguely so these items are in the margin of attention. We can attend to only one thing or a limited number of things at a time. Information processing and attention are closely associated. We cannot process all the information in our sensory channels, or filter, of partially block out, some inputs while letting other through (Treisman, 1969; Lindsay and Norman, 1977).

However, there are many models given for the processing of information but four models are main:

1) Filter model of Attention: In the filter model of attention, inputs in the margin shift to the focus when various attention-getting features of the environment are present in the filtered input. Filter models of attention differ with respect to where the blocking occurs in the sensory channels. Some theorists (Broadbent, 1958) say that the filter, of information bottleneck, is at the sense organs, or at least in the very early stages of the input processing. Shiffrin and Schneider (1977) argue that the filtering takes place at later stages of information flow. For example, at the stages where the input is interpreted as meaningful.

Originally Broadbent proposed that when a channel was rejected, it was an all or none situation, so that if a subject did not attend to stimulus, it could have no effect upon him. However, there is some evidence (Broadbent and Gregory, 1963; Treisman, 1960) that information coming over a rejected channel may be merely attenuated rather than blocked completely.
2) Treisman's filter attention model: Treisman (1960) has proposed a modification of Broadbent's theory. A basic assumption is that a selective filter attenuates rather than blocks completely information coming over a rejected channel. Whether or not the attenuated "signal" will be detected depends upon the "threshold" of the corresponding item in the "store for known words." Thus if the threshold for a word is relatively low, either because the word is highly probable after the immediately preceding words because, like one's name, it has "effective" value, detection of the attenuated signal coming over the rejected channel will take place. There is a good deal of evidence, that certain physical aspects of the message coming over the rejected channel are discriminated and perceived through other, more refined features are not. Thus as we have seen that a discrimination based on differences in the distribution of frequencies. Apparently then, some types of analysis occur whether the signals are received over an accepted or a rejected channel, so presumably this processing takes place "prior" to point where the selective filter chooses among "active" channel.

According to Triesman's modification of Broadbent's (1958) filter theory of selective perception, the thresholds of words B and C are lowered by their high transition probabilities after word A.

3) Neisser's synthesis model: Neisser (1967) argued that perception is not simply the activation of something inside us by an input from the outside. Perception could be looked upon as synthesizing process. One perceives something by synthesizing that thing; that is, by making it. The notion of perception as a synthesizing process was originally proposed as model of speech perception (e.g., Liberman, 1970). It was argued that one perceives a sentence by using one's own speech-production mechanisms to produce a sentence to match the input. Neisser proposed this model as a general model of perception: Perception of any event is the result of the synthesis of that event by the perceiver.
4) Kahneman's limited-capacity model: In an interesting addition to the models of attention, Kahneman (1973) has argued that paying attention could be looked upon as doing work. At any given time, there are many activities that could be carried out those that have been activated by receiving an input from the external world. However, external input alone is not enough to actually have the activity carried out. When a person attends to some activity, this provides the additional energy needs to carry it out. Since, there is only a limited capacity available for attending to activities, or, to put it another way, only a limited amount of energy available, then one cannot deal with all the activities that could be carried out at any time.

Types of Attention Processes:

At present, the word 'attention' is applicable to a wide range of activities and has a variety of different meanings to investigators whose main interest is in such field as hearing, visual perception, speeded performance, etc. Moray (1969a) has distinguished among several sub division of attentive phenomena in addition to its selective aspect. These include:

Concentration:

The attempt to exclude stimuli which might interfere with the performance of a given task; 'search' - a situation in which the observer hunts among a set of signals for some specified subset of signals; 'activation' - readiness to deal with whatever stimuli appear; "set" - the preparation to respond in a certain way or a receive a particular type of stimulus; and 'vigilance' or 'sustained attention' - the
ability to maintain attention for prolonged periods of time. Moray has suggested that these subdivisions are not necessarily closely related to one another and that more than one theoretical model may be necessary to accommodate all of them. Dember and Warm (1979) have called the different attentional processes as dimensions of attention.

Span of Attention:

Span means how large an amount of certain sort of materials can be grasped in one view and be errorless announced.

Averbach and Sperling (1961) proposed a technique called 'sampling technique' or partial report method which involved the presentation of an array of stimulus material, say 3 row of digits to the subject without indicating to him which one of the 3 rows he is required to report later. Immediately after the withdrawal of the stimulus field, the subject is asked to report a particular raw of stimulus items. If he can recall, say, two-third of the row, it is assumed that the subject, in fact, could take in two-third of information from the total display. By using this technique the investigators were able to show that the subject takes in considerable amount of information, about 2 to 3 time more than his span is apparently indicated by the usual whole report method.

The partial-report technique essentially involves presentation of some kind of signal immediately after the exposure of the stimulus configuration has been withdrawn, and this signal in turn signifies which part of the entire stimulus array is to be reported. In the whole-report method the subject can only report 4 to 5 irrespective of the actual number of letters presented in a matrix. But in the partial-report method the subject can report almost 100 percent of a row, irrespective of
its position in the array. These results clearly suggested that the subject does receive more information at the time of presentation; but at the time of reporting all of them are not available, particularly when the delay is one second or more.

Distraction of Attention:

The concept of distraction has always been associated with attention. Involuntary division of attention is called distraction.

In general, the term distraction refers to deterioration in performance, in terms of some objective criteria, such as number of correct responses made, or nature and number of errors occurred in the presence of some experimentally introduced extraneous stimuli which are redundant to the task stimuli (Sen. 1983). In a distraction experiment, while a subject is performing an assignment which needs close attention, extraneous stimuli - distractor are introduced to find out whether, in any way, work suffers and if so, how much does it suffer (Kothurkar and Anarase, 1986)?

There is some general agreement that the nature of task as also the nature and intensity of extraneous stimulation, are important factors in determining the effect. The temporal relationship between the task and the distraction and their relative complexities are also important variables. Moreover, the effects of distraction are not constant; it tends to lose its distracting potential with the prolongation of its stimulation, i.e., subjects make another adjustment with continued distracting condition. For instance, they may become 'negatively adapted' say, to the noise situation.
Division of Attention:

Division of attention would involve simultaneously focusing on two separate object or activities. If one is automatic, no division of attention is required as seen in driving and talking simultaneously. An individual often performs several activities in parallel and in such a situation apparently there seems to be a division of attention. In general, however, simultaneous performance of two attentive task involving cognition does not ordinarily occur. Usually there is either rapid succession or alternative between the two task as can be seen in the switchboard of a telephone operator or in a cockpit or the two activities are such that they strictly speaking there would not be any division of attention.

Factors affecting Information Processing (Inspection Time and Attention Processes):

1- Physical properties of stimulus: Some physical properties of the stimulus that are important in gaining attention are intensity, size, contrast, movement, novelty, repetition and meaningfulness.

i) Size: Greater the size of the stimulus it will attract the attention more it means the size of the stimulus and attention are directly proportional in relationship.

ii) Intensity: The more intensity of stimulus will attract our attention more.

iii) Contrast: Contrast stimulus attracts the attention more e.g. the black figures on white surface is easily attend able.

iv) Meaningfulness: Meaningfulness of the stimulus effect the attention more.

v) Novelty: A novel stimulus is more attract our attention than the known stimulus.
2) Interest: Because of habitual or momentary interests, individuals vary greatly in their responses to the same stimuli. The naturalist will hear sounds in the woods that the ordinary picnicker would miss. This illustration is represented abiding interest McDougall said, “Interest is latent attention and attention is interest in action.”

3) Motives and Expectations: Certain internal variables, such as motives and expectations, are equally important in determining which stimulus attracts our attention. The advertiser counts on an appeal to the male sex drives when he uses pictures of scantily clad females to advertise anything from carpets to automobile tires. In a culture where hunger is a more generally unsatisfied drives than sex, pictures of food might prove to be a more powerful attention getter.

4) Emotional and mood states: Emotional states especially moods may also effect the ways in which attention is directed. In a hostile mood personal comments are notices that might go un-remarked in a friendlier mood.

5) Individual make-up of a person: Different abilities of a person differently affect the attention processes. There are various factors which influence that total information processing system most important are individual differences such as personality and intelligence which play vital role by many prior research studies, it has been established that every individual has a different intelligence level and personality traits Even identical twins also have been reported to exhibit different personality and intelligence level. In the following section two (Intelligence and Personality) individual factors will be given greater expression.
Intelligence:

Differential Psychologist is now searching for the understanding causes of individual differences in intelligence. A naive but common way of studying differences in cognition is to establish a statistical relationship between performance on psychometrically defined intelligence tests and performance on more theoretically defined laboratory tasks. Because these studies should help in advancing our understanding of the relationship between psychometric and information processing theories.

Man is considered the supreme due to intelligence some person are high in intelligence and some dull since birth & intelligence is hereditary, but appropriate environment is also required for its proper development. Intelligence is not one quality but an organization of number of qualities. We cannot say a person intelligent or fool unless one tests the various aspects of intelligence in his behaviour. Intelligence is not visible directly but it is a hypothetical concept. Psychologists vary in their views about intelligence. William Stern (1914). "intelligence is the ability to adjust one self to a new situations."

Wechsler (1944) "Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with his environment."

Psychologists have varying view regarding the nature of intelligence that is why we say that intelligence is that which we measure through intelligence tests. 'Intelligence', like 'will', is unarguably a valuable word in daily language. even though uses are too broad and too numerous for the term, as uses in everyday life, to form an adequate scientific concept. It is possible to devise test of intelligence.
which have same predictive power, but the scope and accuracy of such predictions are restricted. An individual has obtained high or low scores on a test of intelligence tells us something about that person's capacity to achieve, just as knowledge about how productive a particular factory is tell us what we can expect from it by way of output.

The term 'productive' does not genuinely explain anything at all; it simply rephrases what is already known. Productivity is a valuable descriptive term; it is not an effective explanatory concept. Some authors have suggested that intelligence ought to be regarded as a descriptive rather than an explanatory concept (Horn 1986; Howe 1984; Olson, 1986). Most definitions of intelligence explicitly affirm that by introducing the term one is to some extent explaining performance, not simply describing it. Such definitions state that high intelligence indicates that the presence of one or more of variety of abilities: these include judging, reasoning, comprehending, educing relation and correlates, forming concepts, grasping essentials, acting purposefully, adapting successfully, or having a high level of efficiency or thinking capacity. Consequently, intelligence is seen as being a reason for superior performance, and not simply a description of the performer's output.

Although the level of someone's intelligence is frequently put forward as being a possible reason for that person's success or failure at intellectual tasks, intelligence level is in reality only a descriptive measure, not an explanatory concept. Ten conceivable state or affairs are described, which if proved to contribute to or be indicated by measured intelligence would legitimize the assertion that a statement about someone's intelligence can explain their degree of success at mental tasks. These are that level of intelligence is reliably related to (1) observable physiological variables (2) variability in basic mental processing
mechanisms. (3) The capacity to learn or remember. (4) Fundamental thinking skills (5) the ability to reason abstractly (6) the complexity of a person's cognitive functioning (7) adaptability or mental flexibility (8) executive controlling functions, or (9) unspecified biological mechanisms, or (10) that indications of measured intelligence level precisely identify intellectual qualities that an individual possesses. The evidence fails to provide firm confirmation of existence of any of these 10 state of affairs, indicating the measure of intelligence level have little or no explanatory value. If a statement of about someone's level of intelligence tell us something about the causes of that person's performance, for instance by identifying certain contributory state of affairs then it would be fair to say that in labeling someone as being intelligence one would be going beyond simply describing their performance and pointing to fact that help to explain it. To understand the nature of intelligence, many theories have been forwarded by different psychologists.

According to uni-factor theory, intelligence is that mental energy which conducts all mental functions and all behaviours of a man. Two factors theory described intelligence as General intelligence and Specific intelligence. General intelligence affects every activity where the effects of the specific intelligence are confined to specific activities. Multi factor theory was propagated against Two-factor theory. According to this theory, an individual's behaviour depends upon a number of independent abilities. Thurston negated the theory of General. Specific factors and accepted the group factors of mental organization. He also utilized factor analysis method for explaining the factors of intelligence.

Vernon (1961) proposed hierarchical theory, based on factor analysis method added that factor related to specific mental abilities are related to various cognitive actions. According to Guilford's (1959) three-dimensional theory, the
structure of intelligence is based on three original mental abilities i.e. processing of thinking, contents on which thinking is done and product units which are produced after thinking.

While analyzing the definitions and theories of intelligence Morris (1970) says, "many researchers are unhappy with definitions of intelligence that focus entirely on problem solving. To understand the need fully, the process of cognition and thought, we came to view intelligence not as a list of abilities or factors but rather as a dynamic information processing system for ordering and dissecting life’s experiences and messages."

Personality:

Personality make-up of a person also affects not only the attention but the entire information processing. The word personality in English is derived from the Latin word "Persona". In general personality refers to the overall impression that an individual makes on another. It is the total picture of all qualities and abilities of person. It is the totality of behaviour (Das, 1985) Personality is the product of interaction between individual potentialities and environmental forces. It is resultant of interaction between hereditary trait and environmental stimuli. Personality is the individuality that emerges from interaction between a psychological organism and the world in which he has developed and lives (Freeman, 1962). A man's personality is the total picture of his organized behaviour, especially as it can be characterized by his fellowman in a consistent way (Deshiell, 1937).

Although it is hard to define personality, but when psychologists use this word, they intend to refer to qualities within a person, characteristics of one’s
behaviour, or both. The most famous definition of personality in the field of psychology has been provided by Gordon Allport (1937) who mentioned both the inner qualities and behaviour with an over emphasis on the inner qualities.

Allport (1937) wrote, "Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment".

Psychologists are also of a particular view that personality is the key factor influencing all behaviour. The same can be easily proved by a very general definition provided deliberately by a great personality theorist Cattell (1950) "Personality is that which permits a prediction of what a person will do in a given situation". He further adds, "The role 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."

Another definition of personality is given by Eysenck (1960) Personality is "more or less, stable and enduring organization or a person's character and temperament, intellect and physique which determine his unique adjustment to the environment."

It is, at the same time, interesting to note that no single definition of personality is acceptable to all the psychologists. They, however, agree and argue that there are consistent patterns of differences among people. As personality has been studied in a number of different ways, therefore some broad approaches to explain the origins and make up of personality have been propagated.
Approaches of personality:

Some personality psychologists are most concerned with theory and generate ideas about the causes and native of "Personality". Each theorist conceptualizes personality differently. Most of the personality theories can be put into following four categories.

1) Type and Trait Approaches: Type and trait approaches of personality both focus on people's personal characteristics. However, various types to theories and trait theorists differ in the ways that apply those personal characteristics to describe people. Eysenck's Hierarchical theory, Allport's theory are the main personality theories of the group.

2) Dynamic approaches: These approaches focus on interactions between hidden needs motives and impulses to produce person's behaviour. Psychoanalytic theory of Freud, Jung's analytical psychology and individual psychology of Adler, Horney's interpersonal theory are the main personality theories of this category.

3) Learning and Behavioural approaches: The behavioural view emphasizes skinner's ideas, which stress the importance of operant conditioning in determining personality. Acc to these theories the behaviours that make up personality are conditioned or learned. While social learning theorists believe behaviourists have missed much or the richness in personality by not studying how people process information about their world. Acc to social learning theorists, cognitive processes mediate the relationship between the environment and behaviour. Famous theories, which belong to this category, are Skinner's radical behaviourism and early social learning theory of Dollard and Miller.
4) Humanistic approach: Humanistic Theorists as a group all agree that personality should be studied with a human model, not that personality is much more than a mechanical mirror of the environment. Theories belonging to this family include Roger's self-theory and Maslow's Self-actualization theory.

Out of all these theories which theory is best? We can't give answer with confidence that this theory is good in itself. In fact there is some goodness and some useful insight in many of the major personality theories, but Eysenck's theory shows the fullest and most accurate picture of personality dimensions in short.

Eysenck Personality Theory:

This theory belongs to the type and trait approach. Eysenck theory of personality was developed and modified by himself over the year (1947, 1957, 1960, 1963, 1967, 1970 and 1972). Eysenck proposes that the personality is hierarchically organized. At the bottom, there are specific responses to specific stimuli. At the next level there are habitual responses and then trait and finally on the basis of factor analysis, Eysenck concluded that overall there are three dimensions of personality 1) Extraversion 2) Neuroticism 3) Psychoticism.

As reported earlier, Eysenck has extracted three types of super factors Extraversion (E) Neuroticism (N) and Psychoticism (P) He regards all three types as part of normal personality structure. All three types are bipolar, with 'extraversion' opposed to 'introversion' 'neuroticism' opposed to 'stability' and 'Psychoticism' opposed to 'super ego' function as presented.
Extraverts are characterized by jocularity, liveliness, quick wittedness, optimism and other traits indicative of people who are rewarded for their association with other people (Eysenck and Eysenck, 1969). Introverts are characterized by the opposite traits. They can be described by quiet passive, unsocial, careful, reserved, thoughtful, and pessimistic, peaceful, sober and controlled (Eysenck, Nias and Cox, 1982).

Eysenck also provides the causative explanation of his personality dimensions. Acc. to him, individual differences in extraversion/ introversion are due to inherited difference in the functioning of nervous system (Eysenck, 1967). and the correlated E/I to the amount of arousal in the cortex, which is mediated by the reticular formation. The Theory states that the people in whom the arousal is relatively low in the resting state will behave in an Extraverted manner where as people in whom arousal level in the resting state is relatively high, will behave in an introverted manner. He states that the main activity of the cortex is the inhibition of the lower centers so that the more aroused the cortex is, the stronger the inhibitory function it plays.

Eysenck and Eysenck (1975) described that high N scores are neurotics while low N scores are emotionally stable. A person having a higher score on neuroticism is "an anxious, worrying individual moody and frequently depressed. He is likely to sleep badly, and to suffer from various psychosomatic disorders. He is overly emotional, reaching too strongly to all sorts of stimuli, and finds it difficult to get easily cool after each emotionally arousing experience. His strong emotional reactions interfere with his proper adjustment making him to react in irrational and sometimes in rigid way". An stable individual with low N scores on the other hand, "tends to respond emotional only slowly and generally weekly."
and to return to baseline quickly after emotional arousal; he is usually calm, even-tempered, controlled and unworried."

The third dimension in Eysenck's personality theory is Psychoticism. "High P scores on psychoticism are ego centric, aggressive, impersonal, cold, lacking in empathy impulsive, lacking in concern for others and generally unconcerned, about the rights and welfare of other people. One the other hand, a possible concern of their general identity is that they are always original and creative, provided they have reasonable intelligence back ground and the like". The opposite end of the psychoticism dimension has been referred some times to the "Super ego."

Eysenck personality theory mainly works with the broader dimension of extraversion including two correlated factors i.e. sociability and impulsivity. Sociability involves friendliness, avoidance of isolation or extreme independence, and a lack of shyness. Impulsivity refers to difficulty in self-control; inability to resist temptation and rapid shifts from toy to toy means they cannot pay attention to any object for a long time.

The first two dimensions i.e. extraversion and neuroticism has been given very wide representation in research findings. Moreover, extraversion dimension with its underlying traits has got the maximum attention from researchers. For assessment on these dimensions, Eysenck himself developed a number of tools like Maudsley personality inventory (1959), Eysenck personality inventory. (1964), Eysenck personality questionnaire (1975) and the latest Eysenck personality profiler (2000). Personality researchers find it very difficult to ignore the point view of Eysenck et al on personality and their tools of its assessment.
It this way, it has been understood that information processing is an important part of cognitive system and the same can be understood in a better way in relation to intelligence and personality of the information processing individual.

With this much background, we may now pass on the next chapter dealing with Review of the pertinent literature.