CHAPTER - I
INTRODUCTION TO PSYCHOLOGY

People use the terms ‘psychological’, ‘mental’ etc., very freely. But many of those who use these terms are far from having a real understanding of the nature,scope,methods and uses of psychology as a scientific discipline. Some people regard it as a part of philosophy. Others equate it with magic. Some view it as madness. Still others are of the opinion that psychologists are either mystics or mysterious people, their interest in psychology mainly arises from uninformed curiosity. They are of the view that if they studied psychology they would learn about miracles, mysteries, madness and that it would be an exotic experience. Many of them feel that the main use of psychology is in treating mentally abnormal individuals. While certainly this is an important area of application, it is not the only area. Today, psychology finds useful applications in an individual’s life almost from the womb to the tomb.

The common man is very much aware of the uses of other sciences, such as physics, chemistry, biology, medicine and, statistics, in daily life but finds it difficult to appreciate the possible uses of psychology in everyday life. It is a unique feature of psychology that while it can be applied like the other sciences in a variety of situations, such as work, education and play, it can also be applied by the individual to promote his own happiness and minimize his sorrow. It can help analyze and understand others’ actions and, also one’s own in a better light and, improve the quality of life. The science of mental health is helpful in ensuring normal and happy mental life just as physical hygiene helps us maintain and, develop our physical health.

The student who finds it difficult to study can improve his study habits a lot by applying some of the principles of effective learning brought out by modern psychology. Similarly, inter-

personal conflicts and, quarrels can be resolved by a knowledge of psychology to a certain extent. Psychology can also help in the choice of a right educational career, a job and, perhaps even a life partner. Parents who find the behaviour of their children puzzling can learn a lot from a study of psychology. So can a teacher in dealing with a pupil who is either rebellious or who does not study properly. The doctor who treats patients will gain a lot by studying psychology and will have a better understanding of the reactions and, the moods of his patients. Even an engineer who designs a machine can do a better job of designing machines by understanding individual differences and limits of performance. The commercial advertiser is the one, who has made the maximum use of psychology in designing his or her advertisements. Products are promoted keeping in mind the psychology of the masses. The officer in the battlefield can maintain the motivation, courage and morale of his unit by an appreciation and, application of the principles of psychology. Thus, we see that knowledge of psychology is helpful to all people and, in all situations with probably no exception. It is in view of this that it has become imperative for everyone to have some understanding of psychology so as to develop an insight into human behaviour. In fact, it has almost become a part of general education.

It has been said that in the modern world many human problems are of psychological origin. The twentieth century has been described as an age of tension. As civilization and, life become more and more complex, psychological problems are likely to increase. As one psychologist put it, “The greatest problem of man today is man himself”. We have understood most of nature, the sky and the ocean, the earth and the mountain, all the time taking it for granted that we know ourselves. While we have been able to predict and control natural phenomena, we have not been very successful in understanding and, predicting human actions. Atomic energy which can be used to improve human life is mostly used to manufacture bombs to destroy life. Thus, the human being

who is supposed to be rational has proved to be the most irrational. Educated people do exactly what they are not expected to do. These instances of irrational human behaviour speak very eloquently of the need for understanding the behaviour of others and also• oneself. The best of scientific creations is likely to be put to the worst use unless human nature is understood and, human behaviour transformed into a more mature and adaptive level.

It is true that ancient philosophers and mystics, particularly in India, had realized the need for psychological understanding and discipline. But this knowledge and, approach has not gained much currency among people at large As a result, we are full of misunderstanding and misinterpretation of our own behaviour and, more so of others. Each one of us is ready to blame the other and believe that we are holier, better and more virtuous than the others. Very often, we behave like the proverbial ostrich which closes its eyes and believes that the entire world is asleep. It is, therefore, necessary for everyone to study and have some understanding of psychology.

However, studying psychology is different from studying physics, chemistry or any other natural science. Psychology should not be studied like any other academic discipline because it has an immediate and direct relevance to one's own life. It is important that this aspect should be appreciated and emphasized by all, particularly by students and teachers who are involved in the teaching and learning process. Unfortunately this attitude has not been developed and that is why psychology has remained to a large extent a sterile discipline in our country. On the other hand, the subject has found both extensive and intensive applications in other countrie

IS PSYCHOLOGY A SCIENCE ?

The question has often been raised in the past and is perhaps raised even today as to whether psychology is a science. People

who raise these questions compare psychology with physics, chemistry and other sciences and start wondering how we can study the behaviour of human beings in the same way as properties of matter or investigation of chemical changes. To a certain extent such a question is justified because of the very nature of the subject-matter of psychology, that is, behaviour. The physicist or chemist investigates processes and events which remain stable and constant to a large extent. This makes it possible to measure and predict with a reasonable degree of accuracy. But this is not the case with human behaviour. Firstly, human behaviour appears to be much more unpredictable than the reactions of physical and chemical substances. Secondly, it is found that human behaviour shows a lot of variation from individual to individual. Given the same circumstances, people differ widely from each other and the same person behaves in different ways at different times though the circumstances appear to be the same. This type of situation appears bewildering and makes one wonder how even measurement, let alone prediction, is ever possible.

Let us look into this and examine why behaviour is so variable. The answer is that human behaviour is just much more complex than the reactions of physical substances. Man is much more sensitive. It is this which makes behaviour more complex. So, the difference between human behaviour and other events or occurrences is only in the degree of complexity and there is no other basic difference. This means that we should employ different types of methods and analysis.

At this point we may even examine the concept of science itself. The concept of science is not a fixed and static concept. For example, until recently mathematics was treated as a discipline falling under the category of liberal arts even though physics and chemistry made extensive use of mathematics. Similarly, for a long time, laboratory experimentation was regarded as the only legitimate method in science. But with the expansion of fields like

geology, astronomy, geography and other disciplines, methods like field survey, observation, data collection etc., came to be accepted. All this shows that the term science is today not used in the same way as during the eighteenth and nineteenth centuries. Today, it means, not a body of knowledge but an approach to understand and study events. In simple terms, any investigation or enquiry which is systematic, careful and methodical is scientific. Thus, economics, history, political science etc., are today regarded as sciences. They are known as social sciences.

Similarly we may talk of behavioural sciences which include psychology, sociology and anthropology. The scientist today does not look for a simple and isolated cause-and-effect relationship. He is interested in a comprehensive understanding of things and events in nature. He does not look for simple and mechanical explanations. Twentieth century physics is totally different from the physics of the nineteenth century. This shows that what is considered science today is different from the traditional concept of science. In the light of this, the reader will appreciate that psychology is a science though very much different from the other sciences. Its methods are scientific though different from those of other sciences. As a science it deals with phenomena much more complex, and, therefore, not very predictable. This oniy means that the challenges before the psychologist are more difficult but certainly not insurmountable. It is a science with a difference.

Yet another factor which makes psychology a different type of science is that whereas other sciences investigate things around man, psychology studies man himself. Of course, biological sciences do study man but psychology does it with a difference. It is interested in behaviour, which is more subtle, less obvious and, of course, more varied, whereas the bodily processes are to a large extent uniform. This is not the case with human actions and their motivations.

The reader will appreciate this more and more as he journeys through this book. He will gradually come to appreciate the scientific approach and status of psychology and may not entertain any serious doubts as to whether psychology is a science.

PSYCHOLOGY AND COMMON SENSE

In the above paragraphs it has been argued that psychology is a science by itself, though with a difference from other fields of scientific knowledge. A main point of difference relates to the terminology employed in psychology. The reader as he goes through this volume will find that many of the terms employed in psychology are not different from those employed in everyday life. Examples of such terms are learning, remembering, motivation, need, personality etc. This often gives the impression to the reader that psychology is nothing but the use of common sense. This impression is sometimes also strengthened by some of the findings reported by psychologists. For example, when a textbook of psychology states, in a highly pompous manner that efficiency of learning depends on practice, the reader rightly wonders what is so profound about this statement.

At the same time the reader also gets the opposite feeling that psychologists often indulge in unnecessary jargon trying to introduce complex explanations for very simple phenomena. Thus, it is often said that a psychologist tries to make a mountain of a molehill. To a certain extent perhaps, the reader is justified in getting this feeling. But at the same time it is necessary that he gets over these feelings and develops a right appreciation of the subject.

Science deals with ordinary phenomena. Events and occurrences which are common and part of our everyday life have the first claim on the scientist's attention since ultimately scientific knowledge should help to improve life on this planet. If this is so, it is only right that psychology should be dealing with common

occurrences and what appears to be common sense. At the same time what is common need not necessarily be simple. A scientist studies and investigates common events but does it analytically and systematically. In view of this, his or her conceptualisation often has to be more precise, systematic and analytical compared to that of a layperson. Further, when a psychologist studies a process like learning, he or she has to do this taking into account other processes like motivation, remembering etc. While learning appears to be a simple and unitary process to the layperson, this is not so from a scientific point of view. Thus, the reader will find that the psychologist has coined a term like "reinforcement" to explain the relationship between learning and motivation. Let us take a simple example from chemistry. To the layperson, water is just water but to a chemist it is H20(two atoms of hydrogen and one of oxygen). The layperson's approach is experiential while the scientist's approach is explanatory. The latter has to explain the experiences of the former and to achieve this, the language of the former is often found inadequate. The reader will now understand why he gets the feeling that psychology appears to be just common-sense and at the same time confusing.

Yet another point that may be mentioned is as follows. Many of us will be ready to admit that we do not know anything of physics or chemistry or geology even though these sciences also deal with things around us. But when it comes to psychology most people grudge admitting their ignorance. We feel bad about admitting that we are totally ignorant about ourselves. Everyone of us feels that he or she is some sort of a psychologist. It is this fact which often makes us feel that we know psychology and the psychologists don't. It is a difficult proposition to be objective about oneself and observe ourselves as we observe things around us. Unfortunately, unlike other sciences, the science of psychology has to confront this self-assumed wisdom people ascribe to themselves. The reader will be able to overcome his reservations once he realises this and overcomes this subjectivism.

The authors hope that the reader by now would have appreciated the scientific spirit behind modern psychology and will be able to bring to his learning a scientific attitude. This does not mean that we expect the reader to accept uncritically and mutely whatever is said in this book or for that matter any other book, but it is hoped that he or she will go through the book without any prejudices or biases and appreciate the subject in a true scientific spirit.

WHAT IS PSYCHOLOGY?

Most people use the term 'psychology' to mean a subject which is concerned with the understanding of the human mind and its activities. It is a widely-held belief that psychologists can read the minds of others and understand what is going on in their minds. While this is the view of the layperson, scientists in the field of psychology, however, do not accept this definition. Today scientific psychology is generally defined as the science of behaviour. The term 'behaviour' is employed in a very inclusive and comprehensive sense. We may now see the difference between the layperson's definition of psychology as the science of the mind and the scientific definition of psychology as a science of behaviour.

A few decades ago even scientific psychologists defined psychology as the study of the mind. Soon, however, it was found that defining psychology as the field concerned with the study of the mind created certain problems. The term 'mind' was derived from philosophy. This was felt to be undesirable when psychology decided that it should join the family of natural sciences. Secondly, acceptance of the concept of mind resulted in several questions like: What is the mind? Where is the mind? and so on. The concept of the mind turned out to be rather abstract and, therefore, not suitable for scientific study. In view of this, in the first part of this century, psychologists decided to drop the term 'mind' and adopt the term 'behaviour'. Two outstanding psychologists who initiated

this change were William McDougall and John Broadus Watson. These two psychologists expressed the view that psychology should concern itself with the actual behaviour of organisms, both human and animals, because behaviour is something concrete, factual and observable, unlike the mind. This move was generally welcomed and over the years, a consensus has emerged in defining psychology as the study of the behaviour of living organisms.

This change or transition from 'mind' to 'behaviour', however, was neither smooth nor simple. There were a lot of controversies and conflicts which will be discussed in greater detail in a later chapter. Further, even those who defined psychology as the science of behaviour were not completely in agreement among themselves as to what behaviour is. Some people stressed that only the observable activities of living organisms should be considered as behaviour. People who subscribed to this view were not in favour of using terms like thinking, feeling, remembering etc. because these were not directly observable. In brief, these psychologists held the view that only movements of the muscles, changes brought about by glands and other organs of the human body constituted human behaviour. This view was advanced with vehemence by John Watson, the founder of the School of Behaviorism in psychology. Perhaps, such an extreme view is not held by anybody today. Nevertheless, the emphasis on observability and the role of the body in defining behaviour is still prevalent among large sections of psychologists though they cannot be called faithful followers of Watson.

A second group of psychologists hold the view that the term 'behaviour' should include not only observable behaviour but also the unobservable inner activities and processes. According to this view, terms like thinking, feeling and remembering can be used with perfect legitimacy. Some among this group go even beyond this and emphasize unconscious processes which are not only not observable by others but are unknown even to the person himself

or herself. In contemporary psychology, unconscious processes are emphasized by a large number of psychologists. The emphasis on unconscious processes was first laid by Sigmund Freud. But one can refer to many more controversies and divergences of opinion which over the years have become narrow as research and understanding has increased. Today there is sufficient agreement, if not unanimity, in defining psychology as the science of behaviour as also in the understanding of the term behaviour, which is now used to include the observable, unobservable and inferred behaviour of the organism.

It is difficult to define behaviour briefly. It is easier to describe the nature and characteristics of behaviour. Most psychologists have, therefore, concentrated on the description of behaviour rather than on its definition, and at this point we could consider some of the characteristics of behaviour. This may help us to understand what is the nature and scope of psychology. Definitions of psychology can be left to a later stage or to the reader himself to evolve his or her own definition because ultimately definitions can never be complete or perhaps are not even necessary.

CHAPTER - II
BEHAVIOUR

CLASSIFICATION OF ABNORMAL BEHAVIOUR

It has been a natural tendency on the part of any science to classify the phenomena. This tendency to classify has been much more dominant in the natural and life sciences than in the exact sciences. Since these sciences deal with a greater variety of phenomena varying very much in complexity, the tendency to classify has been much stronger. This is much more so when we deal with behaviour, particularly human behaviour. Those who deal with behavioural abnormalities feel it would be more helpful, in diagnosing and treating normal behaviour, if they could evolve a sound system of classification of different patterns and kinds of abnormal behaviour.

The credit for arriving at such a system of classification for the first time, goes to Emil Kraeplin, a psychiatrist. The Kraeplinian scheme of classification reigned supreme for a long time. However, later, serious doubts came to be expressed about the adequacy of this classification. These doubts came to be expressed as a result of a number of researches. First of all, it was realised that abnormal behaviour can result from a number of factors and as such, to attribute any particular form of abnormality to a single factor in any particular abnormal instance was found to be tricky. Again, it was found that symptoms of different forms of variety showed considerable variations and also a considerable degree of overlap among different diagnostic categories with the result that diagnosis often went wrong. Thirdly, it was found that certain forms of psychological abnormalities were more characteristic of certain stages of growth and development, like childhood, adolescence, old age, etc. In certain instances the abnormalities are progressive, tend to become more elaborate and new symptoms arise. This situation opened up the possibility of an earlier diagnosis proving wrong at a later stage. In such an event, the earlier forms of

treatment may not, prove to be effective, but may be counter-productive. A more serious criticism relates to the very attempt at classification. It is argued that once an individual is assigned to a particular diagnostic category, then this determines the choice and course of therapy. According to this view what is more important is a 'complete and clear description of the specific forms of abnormal behaviour rather than lumping a number of these symptoms together and giving the individual a label. The most serious objection to classificatory attitude came from psychologists belonging to the behavioural schools.

In spite of criticisms, classificatory schemes are still in vogue, and widely employed by psychiatrists and also by many psychotherapists and clinical psychologists. However, the conventional scheme of Kraeplinian classification has undergone a lot of modification. The more recent scheme of classifications take into account a number of factors like causative factors, nature of the symptoms, age of occurrence of the abnormal behaviour, whether they are temporary and transient or endure for a long time. One of the most accepted schemes of classification is the one provided by the Diagnostic and Statistical Manual of Mental Disorder (DSM) which has undergone several modifications over the years. The latest classificatory scheme is known as DSM-IV Table.

STRESS - THE ALL PERVASIVE PHENOMENON

Lewis Mumford in his classical book "The Transformation of Man" observes that if one were to go by the theory of evolution we find that upto the level of the human being, the evolution has been "autoplastic", i.e. to deal with the problems of survival, the organism has been changing itself, from unicellular to multicellular, from the invertebrate to vertebrate, etc. But at the human level, change has been "alloplastic". The basic human nature of the noblest and greatest of human beings today is no different biologically from that of the early savage. The evolution at the

human level has been social, and this through an environment which the human being has been changing and manipulating through his own actions. This means, the emergent problems of stress and anxiety faced by modern man is essentially an offspring of the environment he has created. Man is helpless in confronting his own mischief. We can certainly make an allusion to the story of Mohini and Bhasmasura (the teacher may explain this episode in the class). The effect of all these is, to lead an individual to certain psychological consequences. The 20th century, in spite of all its scientific and materialistic advances has been described as an 'age of anxiety'. Karen Homey is of the opinion that modern society necessarily generates what you call 'basic anxiety' and very few are free from it, and in order to overcome this anxiety certain neurotic trends like restlessness, loneliness, aggressiveness, helplessness, compulsiveness and radicalism, etc. develop. This seems to be a new form of religion.

In the past few years, a concept has emerged in behavioural science research and also physiological research to understand and evolve ways and means of dealing with this state of human existence. Psychologists, physiologists and medical scientists and many others have found that the term 'stress' can be borrowed from physics to explain many of the symptoms described above. It has been shown that rapid socio-cultural changes, ecological changes, certain psychological factors, lifestyles, all contribute to the stress. We may examine in brief the concept of stress, its nature and consequences.

M. Franken Heuser observes, "life in contemporary society is less stressful (physically) than that of any previous generation. Our age however has its own problems, many of them psychological or social in nature. Today we need not be starved in cold or physically exhausted for stress to occur (as in the earlier times). Life in technologically advanced societies imposes new demands on the same bodily resources that helped our ancestors to survive, for making them fight or flee".

David Hamburg, leading medical scientist observes "our species has moved rapidly to take advantage of the technological opportunities and their concomitant material benefits, to undertake patterns of behaviour which are at times achieved only at high costs in terms of psycho-biology". These problems ultimately result in 'stress'.

CAUSES OF STRESS

From the above paragraphs we come to understand that Stress results from a number of factors and can be definitely harmful to the individual. The effect of this harm can vary in form, degree and content. Stress is related to environmental factors or events of a personal nature like loss of a job, loss of a dear one, the fear of financial losses, or a series of crises etc. Such factors which contribute to stress are described as stressors. These then create a need for the individual to change his habits, behaviour, attitudes, etc., which in turn enhance the stress. Thus, there appears to be a vicious circle-problems demand for change - ineffective change increase in stress, and finally one reaches a stage where there can be a complete psychological breakdown.

It is not only the actual occurrence of an event, loss or failure, but even the perceived possibility of such an event can cause stress. For example, whenever our government proclaims that it wants to enforce austerity (often it is only a pretension), people are afraid of losing their jobs or blocking of promotions or future unemployment of their children. Similarly, automation is perceived as likely to result in a loss of jobs or even reduced employment. Even today, there are many examples in our country, where people resist changes in organizations out of fear. The opposition to the move towards privatisation is an example of such anticipatory reaction.

A third set of factors relates not to situations as such, but to how people react and respond to this actual stress or anticipated

stress. People differ in their reactions to the stress. Some react more intensely. Others seem to overcome the stress and a third set of people do not appear to be bothered at all. It is here that we get into trouble. The onset and effects of stress are imperceptible, not visible and perhaps not consciously experienced by the person himself. At the other end there are people whose adjustment processes collapse and the effects are visible. But even if the presence of stress is imperceptible, it can certainly affect the basic physiological processes and when sufficient amount of stress accumulates, can result in a breakdown, psycho-physiological disturbances, or defensive behaviour like withdrawal, rationalisation, conformity, etc. Of course, there are individuals who are able to react to stress positively and effectively and in such cases stress turns out to be an advantage and brings out the best in the person. This possibility depends on how mild or severe the stress is and also what type of a person the individual is. In view of this it has often been argued that a very mild degree of stress is in fact helpful and has motivating effect, but one does not know where the grey area is and at what point constructive stress can turn into destructive stress.

EFFECTS OF STRESS

Stress affects the organism as a totality, even though the stressor may be located in any particular segment of his life space. For example the stress is related to the work situation it does not cease at 5.00 PM when the individual leaves the work spot. It continues to affect him even when he goes back home. The effects of stress are general and diffused. Similarly, stressing situations of personal life can affect behaviour in the work situation, social interactions or for that matter in any situation. Stress, then, is essentially a sort of pressure of a psycho physiological nature arising and accumulating as a result of environmental factors or as a result of an interaction between environmental factors and behavioural styles, necessitating varying degrees of behavioural changes cognitive, conative and affective.

The effect of this is to weigh the individual down and this manifests itself in various forms ranging from simple restlessness at one end to severe psychological breakdown at the other. Stress is very often caused by not just the intensity of the stressors but by our own reaction tendencies, emotions, desires, prejudices, etc. Incidentally stress can also be contagious. Others can gift away their stress to us and the reverse is also possible. For example, during examination times it is often seen that if the child is under stress because of the competitive nature of the examination the parents also experience stress and almost become panicky. This is like the man experiencing labor pains when the woman is delivering a baby. Stress involves psychological, social, biological and physical factors and in most instances all operate together.

All of us experience stress of varying degrees of intensity. Of course, in most cases mild stress is overcome by learning new coping behaviour which, as already mentioned, not only helps us to overcome a present set of stress but also equips us to be in a position to face future stress. But, there are others who are not able to achieve this. There are wide individual differences in the capacity for stress tolerance, and the ways in which people react to stress. Thus both acquisition of stress and the manner of reaction to it are the results of the type of socialisation and lifestyle of the individual.

MANIFESTATIONS OF STRESS

Stress often operates without being noticed. As mentioned earlier, every person has a certain capacity to tolerate stress. But if the stress goes on accumulating, slowly certain symptoms begin to appear. Some of the common manifestations of stress are as follows:

It may appear as restlessness, increased anxiety and gradual decrease in efficiency. The individual after sometime really gives the appearance of being under tension. Slowly symptoms of

respiratory problems, cardio-vascular problems, ulcers, skin problems, etc., begin to appear; insomnia, decreased activity level, loss of efficiency, decreased ability to concentrate and increased irritability are also some possible manifestations. Often multiple symptoms can be evident.

Coleman observes that stress need not always be unpleasant and result in negative consequence; the instances where stress results in negative consequences are referred to as 'distress'. On the other hand in certain instances other forms of stress can stimulate a person to become more efficient, more creative and active. This type of stress is known as Eustress. The student will certainly appreciate that, while the latter category of stress is welcome; the former is not. In fact, we may even say that very mild form of stress is often found to be congenial to more adaptive behaviour. But this type of stress is much less frequent than negative stress. Only people with very high degrees of 'stress tolerance' are likely to derive benefit out of Eustress.

SOURCES OF STRESS

Stress can be caused by many factors in the life of an individual, spread over years. It comes to be felt only if it exceeds a certain critical intensity. Some of the factors which can contribute to the accumulation of stress are as follows:

a. Frustration

Repeated failures in our attempts to achieve certain goals can contribute to stress. This type of repeated failure leads to frustration. Frustration involves the blocking or thwarting of our needs. Frustration again, can be mild and temporary or severe, prolonged and cumulative, resulting in stress. Lack of opportunities, delays, discriminatory treatment, lack of resources, etc. are some of the common factors involved in frustration. Any one who has had some work to be done with a government office would have certainly experienced frustration because of delay, silly objections, callousness and utter irresponsibility of the system.

Similarly, personal limitations like physical limitations, repeated failures, etc. can also cause frustration. Chandler, Fidler, Southgate and many others have pointed out how loneliness, actual or psychological, can result in frustration. In modern society, many people feel alienated. The brazen and shameless attempts by some to acquire positions of power, material wealth, etc., may definitely alienate the people and make it difficult for them to live a wholesome and meaningful life. It is here we see a paradoxical situation. Many of those who are 'go getters', believe that "ends justify means" and are materially successful, but at the same time find themselves equally unhappy or worse than those who do not subscribe to mercenary ways of life. In fact, it has been found that stress-related symptoms like, diabetes, hypertension and ulcers are much more common among those who apparently succeed by pushing and, driving themselves to achieve "success". The pressure to go after success endlessly, ultimately results in stress which manifests itself in various forms.

b. Conflicts

All of us experience conflicts, 'to do something or not to do'. Conflicts can be of different types, which have been discussed elsewhere. In modem life, almost every point of decision-making in one's life tends to create conflicts, like choice of a job, educational, choice of a spouse; choice, in fact any choice situation poses a problem. Conflicts have been described as approach-approach type, avoidance- avoidance type, and approach-avoidance type. But whatever be the nature of the conflict, it necessarily generates stress resulting in considerable amount of discomfort, restlessness, etc.

c. Pressure

Contemporary society puts a lot of pressure on the individual. It is often very difficult to enjoy solitude. There is competition everywhere, for education, for job position and almost anything. There is a premium on success at any cost, and by and large success

is measured in terms of possessions and positions. We have to prove to be the fittest to survive (Darwin must be chuckling in his grave; whether his theme is scientific or not, it has proved prophetic). Today there is struggle for 'moving up' and the pity is, there is a struggle not only for real success but for imaginary success. The human being has become a victim of his own perverse value system.

Here, a problem arises as to who is the fittest. The Darwinian theory, simply and logically, based the 'concept of fitness' on the physical capacity of the organism to endure deprivation and possibly even competition. But, in our society, often it happens the other way. Today "those who are successful are deemed to be the fittest, while according to Darwin, it would have been the other way. Instances are not wanting where a person who has been looked down as useless and good for nothing, if he somehow becomes successful is perceived and judged to be very capable and competitive. The same people who condemned him earlier very often can be heard saying "I knew even then that he had some talent". Thus, with so much premium laid on competitive success, we notice a tendency for people to set for themselves unrealistic goals. The result is failure, leading to frustration, and ultimately emerging stress.

The fact that today's society compels individuals to adapt and change their behaviour, whether it is really necessary or not, keeps an individual under pressure. This type of pressure operates in almost every walk of life. Every individual is expected to keep pace with this pressure which seriously affects what Toffler described as 'adaptive circuits'. Similarly, inter-personal relationships can also produce stress. The need to keep up appearances, the variations in the degree and type of inter-personal relations, all complicate life. You are expected to smile and be nice to a person whom you don't like and who in your opinion is a despicable specimen. In addition to the quality of relationship,

the mere failure of interpersonal relationships makes a very high demand. In the traditional societies relationships were limited but stable. Unfortunately this is not the case in today's society. The closest relationship can break for no reason.

PERSONALITY FACTORS

In addition to the above there are also certain psychological or personality factors which contribute to stress proneness. Individuals differ in many aspects of behaviour and their ability to tolerate stress and reacting to the same are also related to personal factors. Basic temperamental factors, previous experience, perceived extent of one's control over the situation, all are important factors in shaping the individual's reaction to stress. Friedmen & Rosennan have identified two types of personalities, Type A and Type B, the former always in a hurry and thus flaying with speed and restless. He shows a tendency to crowd activities, or do many things at the same time. He is competitive, anxious, and always on the move. He is the typical hard driving achievement-oriented individual. Many such people experience more stress, often manifested in the form of cardio-vascular problems.

The T is characterised by relaxed behaviour, cautious and tolerant. This type of individuals do not drive themselves nor drive others too much. They plan their activities and have higher degree of stress-tolerance. Researches have shown that there is a fairly high degree of association between Type-A characteristics and proneness to accumulate stress and also being unable to deal with it effectively.

All these factors, like frustration, conflict, pressure and personality and stylistic factors provide a fertile soil for stress to develop and grow, in addition to external demands. The problem of stress experience is lessened if the individual has control over the situation and also control over himself. A sense of helplessness

increases the severity of the stress. It has been noticed interestingly, that there are instances, where actual stressing factors are not essential, but the individual's anticipation of the same is enough. Similarly, it is not necessary that an individual should have the actual ability to control outside and inside factors of stress. The perceived ability and confidence on the part of the individual about his ability to deal with the problems of stress is much more important. Thus, people with 'internal locus of control' look into themselves, are reflective, and are not simply swayed by the environment. They are found to have a greater ability for stress tolerance as observed by Bandura, Geer Davison & Gotchel.

The above discussion of stress as an interesting component of human life has helped to point out a number of factors; social, and psychological involved in the experience of stress. It is obvious then that an individual's attitudes and values play an important role. Similarly, an individual's lifestyle or "reaction type" to the environment is also very crucial. The social psychologist can find very few problems to claim his attention which are more important than stress. He should be able to identify the various internal and external characteristics, which contribute to the onset and increase of stress. Similarly, he can also think of suggesting necessary social support systems for those who are likely to be stress prone. It was seen that very often loneliness is critically associated with stress. The social psychologist can work out ways and means to develop systems and institutions which will provide the necessary social support which, traditionally, the home and the school and religion were providing. However, one hopes that in the process he does not increase the stress of others, but also his own. Today these institutions appear to have become ineffective. Franken Hauser has the following to say :

"When assessing the potential of psychology in promoting human health and welfare it is important to remember that people today have a much better chance than earlier generations, of shaping their own environment to suit human needs. Technology

provides a tool and the task now is to devise application of new technology so that they can contribute to the realisation of social and human goals. What has been observed above is that it is mainly the shaping and consolidation of proper attitudes and values that is probably the most important requirement, and this certainly is the domain of the social psychologist. He cannot disown it and others cannot appropriate this responsibility to themselves “.

STRESS RESEARCH

Stress research has been carried out mainly along two lines. The first line takes a physiological approach because there certainly are physiological factors in the causation of stress. Some of the earliest experiments in this area were carried out by Selye. Selye observed that animals exhibited a generalised system of response to all threatening situations in addition to specific symptoms. There is a General Adaptation Syndrome (GAS) which includes the following :

a. A system of signalling or alarm which arises and prepares the body to resist stress.
b. The stage of resistance, wherein the body tries to cope with the stress.

When these operations in a cyclic form are repeated very often the organism reaches a third stage of exhaustion, and greater vulnerability to diseases. The work of Selye has very much influenced the nature and direction of research efforts to understand the problem of external stress and there is now a general consensus that attempts to cope with the stress can themselves contribute to stress as observed by Avens; Anderson and Tennent; Skiar & Anesmin.

Behavioural or psychological understanding of stress depends on how we define and approach the problem. We may take the approach that stress is a kind of demand or disturbance which appears capable of testing an individual’s abilities to adapt to

various situations. Thus, we may look at stress as a potential threat to adaptability, readjustment, etc., and forcing the organism to seek readaptation.

Our adaptation to stress very much depends on how we estimate the severity of the stress. This primary appraisal should also include an assessment of our own resources to deal with them. It is the latter part which is sometimes called secondary appraisal. However, our assessment of a stress situation is influenced by a number of factors including physical environment and social environment, our own past experience, values, motive, goals, etc. In general, researches have suggested a few models of stress. Perhaps a brief look at these models will be of interest.

1. Arousal Model

This model focusses on the intensity of the stimulation which arouses a stressful situation, both psychological and physiological in the individual. Thus, extreme temperature, noise, etc. can straightaway result in stress. The other models, however, focus on the adequacy or inadequacy of the individual's coping mechanism or his resources.

2. Information Overload Model

The model lays emphasis on the fact that in contemporary society there is too much of information which an individual is not able to absorb.

The only way of coping under this model is by eliminating or blocking out a certain part of the stimulation. Milgram argues that the coldness of the modern urban individual is very much a result of this tendency to avoid stress by filtering out, evading or even eluding certain stimulation.

This may have its consequences on his interpersonal relationships. When he needs emotional support he may not get it.

3. Congruence Model

The argument here is that stress occurs when we are in some way thwarted by the environment and unable to adjust in such a way that our goals will not be thwarted. For example, if there is too much crowd on the street, drivers may not be able to reach their destination fast. Too many telephone calls.may not permit you to do your work. This model has been proposed by Stohals.

FACTORS AFFECTING STRESS

The term stress has been used by psychologists with varying meanings. An idea of the wide range of definitions can be had if one goes through the reviews by Janis and Levinthal, Apply & Trumble, Lazarus. Scots defines stress as a "situation in which adjustment is difficult or impossible but in which motivation is very strong". The emotional and psychological state resulting out of such a situation will be stress. This definition appears to be a more or less reasonable one, for any one to begin a discussion on the problem of sires.

Some of the factors associated with experience of stress are physical changes, isolation, solitude, crowding, noise, lack of privacy, monotony and personality incompatibility. Very often these factors act in combination and rarely do we find that a single factor can account for all the stress.

It has been shown that continuous exposure to the situations mentioned above can result in a high degree of stress, which in turn can have a lot of effects on performance and also debilitate the individual. There is some evidence, of course, to show that occasionally, a mild degree of stress can really augment and facilitate performance. Investigators have pointed, to an inverted U relationship, between the amount of stress and performance. While there has been success in attempts at predicting individual reactions to stress, by and large there has not been much of a success achieved in predicting stress behaviour in general terms.

Laboratory studies and field studies have often shown trends of results which differ from each other. Laboratory simulations of stress, confinement and isolation, have been difficult to complete because of high emotional tension in performance and profound inter-personal conflicts. Field researches on the other hand, as in the armed forces, have noticed success in overcoming combat stress in exploration groups, paratroops landing etc. Thus, lab situations often result in wrong predictions and sometimes gross under-estimation of stress-tolerance.

Noise has been found to be one of the most severe stressors. A few studies on children have shown that children from noisy homes suffer from attention difficulties and consequently poor school performance. Noisy schools can also lead to health problems in children and in adults, high b1ood pressure, lower-tolerance level, reduction in auditory skills, etc. Memory about contents of social situations in pictures viewed under conditions of noise are also affected. Mathews & Canney have shown that noise is such a stressor that it can adversely affect even helping behaviour. When we are under noisy conditions, we are inclined to be less helpful. Heat is another factor which has been studied as a stressor. A commission, appointed to look into the 1960 riots in U.S.A., (Kerner Commission) noted that high temperature was related with extensity and intensity of the riots. A number of other researches have also found supporting evidence.

SELF - ESTEEM & STRESS

Self-esteem as already explained, is a personal and subjective evaluation by a concerned individual of his own value and worth as an individual. There are many extensive discussions of the self-concept which a student may refer to if interested. By and large, it has emerged from most research that each person arrives at a general and relatively lasting assessment of oneself and develops a certain degree or kind of “self-esteem” which has been found to play an influential role in a variety of behavioural situations

including inter-personal attraction, adjustment and academic performance, susceptibility to persuasion, qualities of leadership, and volatile behaviour. There are also studies which have shown that while a person's 'self-esteem' is a fairly enduring variable, nevertheless it can be manipulated through communication and feedback like those of Aronson & Metty, McMillan & Reynolds, Freidman & Doob. Such a possibility of manipulating self-esteem certainly opens up possibilities of its impact on social behaviour. Clinically, there has been evidence to show that while stress behaviour can be influenced by a level of self-esteem, nevertheless, prolonged experience of stress in turn, may have a reverse effect on self-esteem itself. Janis comments that prolonged and continuous experience of stressful and frustrating situations may lead to an accumulation of stress, resulting in decreased stress tolerance, wherein very often the individual begins to feel that every minor problem is very serious. Thus, continuous exposure to stress and frustrating situations can very much lower an individual's self-esteem, often resulting in a loss of a sense of competence and naturally self-confidence. The logical outcome, of course, is decreased performance.

A person with lower self-esteem very often adjusts his performance to suit his degree of self-esteem as shown by Aronson & Carison Studies have shown that under-stress individuals are more amenable to change their attitudes. Such a relationship has been corroborated by laboratory experimental studies both at a physiological level and also self-reported accounts of fear by Helmrich et al, and Helmrich & Hamilton.

STRESS RESEARCH IN INDIA

The nature of stress and its effects certainly appears to have been known to ancient India. The various prescriptions of how to live, what to do and what not to do, the intricate details about styles of lives, what to eat what not to eat, what to hear and what not to hear, what to see and what not to see and also the elaborate

working out of Yagnas, Yogic exercises, etc. stand as eloquent evidence to the fact that the ancient rndian thinkers had a fairly indepth knowledge of the phenomenon of stress, its adverse effects and also the methods of coping with stress. The doctrine of the three gunas, Satva, Rajas and Tamas as also the elaborate enunciation of the doctrine of humour (body hormones), Kapha, Pit/ and Vata (dhatus) are all strong indicators of the pre-occupation of ancient Indian science with the phenomenon of stress, understanding its aetiological factors including personality and temperamental factors.

Ramachandra Rao traces the concept of stress to the Sankhya and Yoga systems of philosophy. He draws our attention to the two terms Kiesa and Dhukha, whose meanings appear to bear a considerable amount of resemblance to the present day description of stress. Ancient Indian texts also have made references to three types of stress, personal stress (Adhyatmika), situational stress (Adhibhautika) and environmental stress (Adhidivika). We can see here an anticipation of what we to-day call indigenous personal factors in tress, situational or episodic factors in stress and finally ecological environmental factors. Ancient Indian theory had also mentioned a number of mechanisms of coping with stress and understanding the same. It was ultimately realised that in the last analysis it is the individual who should help himself by organising his way of life. The fact that in describing various stages of life (Ashramas), prescribing specific duties and also the very insightful emphasis on gradual withdrawal and disengagement from active life and taking to introspection, spiritual pre-occupation and learning to live by oneself, all this is a very eloquent reflection of the depth of knowledge the ancient Indians had, about the origins, effects and manifestations of stress and related phehomena and also the means of dealing with them. But as is usual the thread of research and analysis of stress by ancient Indian thinkers was lost sight of. But during the past decade, there has been a re-awakening of interest in re-discovering what ancient Indian thinkers and

scientists had to say on this problem. It is only hoped that this is a genuine attempt at rediscovery and not pseudo patriotic revivalism. An attempt is made here to provide the student with some idea of the researches and studies which are being undertaken in India in the field of stress including attempts to understand ancient Indian efforts to deal with the problem of stress.

What is attempted here is certainly not an exhaustive or up-to-date or critical review. The purpose is very simple, to provide the student with some idea of what is happening.

STUDIES RELATING TO PHYSICAL & PSYCHO-PHYSIOLOGICAL DISORDERS

A very active area of stress research in India relates to the role played by stress in the onset of different types of physical disorders like coronary disorders, (myo-cardial infarction,) cancer and depression. This line of research on the role of stress and personality factors associated with stress proneness appears to be the most active and productive. This line of research has brought together medical scientists, physiolbgists and psychologists. Some of the studies that can be mentioned in this regard are those of: Ashok Kumar et al; Bhargava, S.C. et al, Bhaskar Naidu & Venkat Ramaiah; Khorana, S; Rama Rao M.V., et al; Katiyar M. et al; Shanmugam T.E.; Srivastava S et al; and Venkob Rao. The studies relate to life events, which are stress producing.

Another line of investigation has been devoted to the identification of the various factors and events and experiences in life that can pre-dispose an individual to develop stress. Some studies along these lines are those of Singh, S.P. et a!, Venkob Rao & Nammalvar; Bhaskar Naidu; Venkat Ramaiah; Harini Kumar & Indira, R. Chatopadyay P.K. & Das, M. It may thus be seen that the second line of investigations concerned with life experiences associated with stress and also their relationship to certain types of disorders, like depression, is also fairly rigorous and active.

OTHER LINES OF RESEARCH

Another set of investigations has been involved in devising and standardizing different types of tools for assessing the amount of stress and also related personality dimensions like those of Gurumeeth Singh et al, and Singh, G. et al. Some of the other areas of research are stress in organisations, and different kinds of employment as seen in the studies of Rama Murthy et al. Sharma & Stiarma and Srivastava, A.K. It may thus be seen that the research and study of stress, and its various aspects including causes role in various disturbances measurement problems and addictions are the few areas where Indian scientists have been taking interest. Incidentally it may also be noted that a vast majority of these studies have been carried out in the post-1980 period indicating that stress research in India is of recent origin and is bound to gather more momentum. Recently one of the authors had the opportunity of looking into an unpublished piece of research which has attempted to relate stress experience to personality factors, conceptualised on the basis of ancient Indian ideas spelt out in the Sankhya philosophy and elaborated much more in the Bhagwad Gita. It is hoped that stress research in India will very soon expand to investigate the role of social and socio-psychological and present day cultural factors in the genesis of stress and also mechanisms which appear to be emerging for coping with stress.

ATTRIBUTION MODE

The student by now perhaps has got familiar with the term ‘attribution’ because it has occurred so frequently in this book. We have certainly discussed the various attribution theories and their application in studying different social psychological processes. The concept of ‘attribution’ has also been employed to understand the phenomenon of crowding. Crowding results in a limitation of one’s ‘personal space’, ‘loss of control’ and other negative processes. These become operative and explosive but only if the person concerned who is experiencing the above conditions

tries to attribute them to some other source, human or otherwise. According to Worchell, crowding as a state thus results from attribution of personal discomfort to external agencies. The focus of the person's attention very often shifts under conditions of high density and the nature, and this kind of shift to a considerable extent, influences the nature and intensity of the negative effects of 'felt crowding Worchell Brown & Webb stated that the individual will experience stress only if he attributes it to the density and not otherwise

In this chapter, an attempt has been made to familiarise the students with the concepts of adjustment, non-adjustive reactions and maladjustive reactions. A brief discussion on stress, which has become an all pervasive phenomenon, is also included; No doubt, the student will be able to appreciate the fact that the discussion here could not be made more elaborate.

CHAPTER - III
INTELLIGENCE

INTELLIGENCE- ITS NATURE AND MEASUREMENT

Q(1) Define intelligence, flow is the intelligence of an individual measured?

What is intelligence-In normal language, intelligence mean, the power of understanding or the capacity to do a thing. But in the field of psychology the term "intelligence" has a wider connotation. It is indeed a vast complex of abilities- It has been defined by different psychologists in different ways. Given, below are a few definition:

1. Intelligence as defined by Wells

A famous thinker wells as defined intelligence in the following words: "Intelligence is the property of recombining our behaviour so as to act better in a novel situation."

2. Intelligence as defined by William Stern:

"Intelligence is the ability to adjust oneself to new situation." Criticism- Both these difinitions show more or less the same thing. These difinitions recognise an innateness as well as acquirability of intelligence. It is based on certain past experiences. But both the difinition are neither comprehensive and complete.

3. Intelligence as defined by Garrett-According to Garrett:

"Intelligence as including, the abilities demanded in the solution of the problems which require comprehension and the use of symbols"

4. Intelligence as defined by Wechsler:

"Intelligence is the aggregate or grobal capacity of an individual to act purposefully, to think rationally and deal effectively with his environments"

5. Husband has defined intelligence in the following words:

"The intelligent person uses past experiences effectively, is able to concentrate and keep his attention focused for longer periods of time, adjusts in a new and unaccustomed situation rapidly and with less consusion and with fewer false moves, shows variability and versatility of response, is able to see distant relationship can carry on abstract thinking; has a greater capacity of inhabitation or delay or is capable of exercising has criticism."

CHARACTERISTIC OF INTELLIGENCE

From the definitions given above we come to the conclusion that intelligence has the following characteristics

(a) It has a capacity to adjust with novel situations.

(b) It makes use of the past experiences and enables a person to have abstract thinking.

(c) It is a sum total of various Powers and faculties.

(d) In fact it is a dynamic of adjustment as A. S. Edward has laid down:

"Intelligence is the dynamics of adjustments or capacities of adjustments to different situations"

THEORIES OF INTELLIGENCE

Several theories have been laid down in regard to the nature and characteristics of intelligence. Some of these theories are being enumerated below:

(1) Monarchic Theory - Dr. Johnson is said to be the chief advocate of this theory. According to this theory, "intelligence" is the one power or capacity which effects and influences all the activities of the individual. No doubt a man has several abilities but it is the intelligence which determines the general ability.

CRITICISM- theory has not withstood the test on several intelligent and abnormally intelligent persons. It has been found that some of the prominent people had below average abilities in many activities, e. g., Drawin had a very bad handwritting.

(2) Oligarchic Theory - Binet is said to be the propounder of this theory. According to this theory memory, imagination, perception, attention etc. are found to a limited extent in the intelligence. Although these qualities and faculties are different from one another but they are found in a mutually interdependent position in intelligence.'

CRITICISM-Experiment have disproved this theory. These experiments show that mental faculties are more or less interdependent. They are not independent and mutually exclusive.

(3) Hierarchical Theory - Binet and Vernon. Vhave profounded this theory which is based on a new view point. According to them hierarchy plays an important part in the intelligence. The hierarchy is divided into two parts:

(1) Verbal, numerical, attentional or V-ed.

(2) Practical, mechanical, spatial-physical or K-m.

(4) Multi-factor or multi-abilities Theory

This is also known as anarchic theory. Thorndike is one of the most important exponents of this theory. According to this theory intelligence is the means of undetermination, independent, rudimentary elements.

CRITICISM- This theory has been criticised and contradicted by Spearman on the basis of the experiments that he carried out.

(5) Two Factor Theory - This theory is based on the thinking and the experiments of Spearman, Galton, Binet, etc. Mc Do 'ggai and his thee followers, Cyril Burt, William Brown and Flugal had advanced this theory. According to this theory intelligence has two parts

(1) General intelligence or 'G'; and

(2) Specific intelligence or 'S'.

General intelligence influences every activity but the specific intelligence is confined to certain specific activities.

General intelligence is found in lesser or greater degree in everyone while specific intelligence is of various types and is found in various individuals in various degrees-These types being independent of each other. Specific intelligence is also guided and influenced by general intelligence.

Criticism - This theory has been upheld by some of the psychologists while others have contradicted and criticised it.
Universally acceptable theory of intelligence-Although different psychologists have advanced different theories about intelligence but no universally accepted theory of intelligence has yet been found out and established.

INTELLIGENCE TEST

Intelligence test is a device of measuring the capacity of understanding, wisdom and intellect. Sometimes it is confused with wisdom and knowledge, but the fact is that the two are different things. According to Ross: Wisdom is the goal and knowledge is only means of reaching it.

In the recent years attempt has been made to measure different faculties and abilities. These faculties and abilities play a vital role in human's capacity and working. Different psychologists have made different attempts to measure the intelligence. The measurement with the help of which the individual abilities capabilities are measured are known as Intelligence Tests.

HISTORY OF INTELLIGENCE TESTS

With the development of the knowledge about individual differences, different attempts were made to measure the intelligence and for this purpose different tests were framed. In the latter part of the 19th century Galton framed different tests in order to measure the work and abilities of different sense organs. With the help of these tests he succeeded in measuring sensory discremination, sensory perception and sensory acquity. These were not intelligence but certainly they were the pioneer works in this respect.

TEST OF CATTELL AND EGGINGANS

In the year 1 880, Eggingans prepared tests for measuring the difference in the intelligence of the individuals. Then in 1890, an American psychologist named Catell prepared certain tests on the basis of these tests. These tests were also intended on measuring the difference between intelligence, speed of reaction, sensory acquity, memory and other mental activities of the individual students of Columbia University.

TESTS OF ALFERED BINET

It was the famous French psychologist, Alfered Binet who for the first time aimed at concrete efforts in this regard. He made certain researches in the mental activities of the school going children, as a result of which he came to the conclusion that in order to give useful education to the mentally weak and deficient, it was essential to put them in special classes. Later on a Committee headed by Binet was set-up in 1904 to investigate the subject.

BINET SIMON SCALE

It was in the year 1905 that Binet with the help of Simon published a scale in order to measure the mental faculties of the school going children who were not upto the mark so far as mental faculty was concerned. It was a complex scale which gave out the capacity of different types of individuals, particularly children of average intelligence age group and those below and above it.

ADAPTATION AND ADJUSTMENT OF BINET-SIMON TESTS

Psychologists of diff countries according to their objective conditions made adaptations of Binet Test. Binet and Simon themselves revised this scale. Such a revised scale was first published in 1903. Later on the famous psychologist Binet and others adopted it. Binet adopted it in the name of ‘Binet’s London Revision” and another famous adaptation is known as “Terman Stamford Revision”. The latest revised scale or adaptation of this

test is known as "Terman Merrill Scale", which was published in 1937.

TERNIAN-MERRILL SCALE

This scale relates to intelligence tests as well. It is now useful for the age group of 2 to 11 years. This scale provided for two types of tests yearly and half-yearly for children belonging to the age group of 2 to 4 years. Many other subjects were also included in this scale. This wale in fact was adopted to various age groups and various types of people. These tests are also able to measure intelligence in a short span of time.

INDIAN EDITION OF THE BINET TEST

Every intelligent test has to be adjusted according to the conditions of a society and the country. Dr. Hebert Rice tried to give an Indian Edition of the Binet Test 'which was more or less different from its actual shape. Late on it was also adopted in Urdu and Punbabi languages. The Indian Edition of the Binet lest has to types of standards.

(1) Ten activities, and

(2) 35 activities.

The smaller standards prove to be more dependable. All these tests had about 100 questions, and their main job was to test the intelligence of the boys in the age group 13 to 18 years.

Later on Dr. Jalota, of Punjab Dr. S. M. Mohsin of Bihar, and others prepared different tests or Battery to test the intelligence differentgroups. I. R.Kurnaria, Dr. Lalit KumarShah, T.C Phillips, H C. Benerju etc. have tried to prepare tests to test the fence of various groups. These are all non-verbal group test. Inspite of it can not be said that sufficient has been done in the field preparing intelligent tests for groups. A lot of efforts are needed to make real efforts in this direction.

KINDS OF TYPES OF INTELLIGENCE TESTS

Intelligence test according to the activities that from the standards of tests. May be divided into the following two categories:

(a) Verbal Tests and

(b) Non-verbal Tests.

According to the subjects, all these they tests, may be divided into following two types

(a) Individual Intelligence Test, and

(b) Group Individual Tests.

Verbal and non-verbal tests are applied to the individual and the groups. These tests may be categorised under the 4 categories:

(1) Verbal individual intelligence test,

(2) Non-verbal individual intelligence test,

(3) Verbal Group intelligence test, and

(4) Non-verbal group intelligence test.

It would be worthwhile to discuss these tests further in detail:

(1) Verbal Individual Intelligence Test

These tests as the name itself indicates, are applied on the individuals in order to test their intelligence. It was for the first time that in 19th century, Sir Francis ‘ Golton and Catell introduced these types of test in order to test the intelligence of the students. These tests were used by their original exponents and also latter exponents in order to test the level of intelligence of b-normal intelligence or students having normal intelligence. Bin Scale, Termen Mertill Scals, etc. fall within this category of the test. When these tests are applied to young boys and girls with definite levels of intelligence, we come to know that b having lower level of intelligence do not possess the intelligence that is possessed by young boys having normal intelligence, Level of intelligence or mental age should conform to physical age or physical development. Certain norms have been set for it. On the basis of the results of these tests the mental age of the young boys and girls is determined. Those who do not possess the mental age

required they are said to posses lower intelligence levels. These verbal individual intelligence tests have been themselves to put to test and on the basis of the results they have been modified and changed to make them scientific and properly planned. The tests that were introduced in 1908 were revised in 1911 and larger number of 'tasks or activities' were introduced. Originally these tests were designed On for small boys and girls, but later on 'they came to be applied to adults as well. Stanford Binet Scale, 'their revised and re-revised editions are examples of these types of tests.

VERBAL INDIVIDUAL TESTS - THEIR WORK AND EVALUATION

These test, without any doubt, have produced quite satisfactory results. They have helped the authorities and the-educationists to have knowledge of the intelligence of the presence with whom they have deal, but inspite of it they have been criticised on the following grounds-

(1) They are based on the thinking power of the examiner or tester add the prjudices of the examiner can always influences the results.

(2) These tests are very time consuming. because only one person is tested at a time. They also require a large number of trained psychologists which is not at all an easy task.

(3) There tests are not suited for children above 15 years of age

(4) There is no place for individual difference in the measurement because there is only one index and so sometimes the results are not very scientific. Because of the difference of diversities measurement forecast regarding academic achievement sometime is not very correct. The forecast regarding academic achievement cannot be uniformly made and that is why these tests do not give correct results.

(5) Through these tests it is not possible to measure inborn or mate aptitudes or abilities of the child. The test and tasks are so designed that the results are very much influenced by the educational and cultural background of the child.

(6) These tests not attach importance to the personality and the emotional stage of the child and so the measurements are only one sided and limited to certain specific aspects.

(7) All these tests as the name indicates are verbal and s those students who have a good vocabulary and power of expression shall be able to get good marks. On the other hand those who do- not possess this capacity shall not be able to secure good marks.

(8) Through these tests, because of the situation enumerated-above, it is not possible to get a real idea about the intelligence level of students. Those children who come from educated and rich families have better intelligence and capacity to reply to the tasks of these tests as compared to the children who come off poor, resourceless and uneducated families.

NON-VERBAL INDIVIDUAL INTELLIGENCE TESTS

These tests as the name itself indicates are intended to test the intelligence of the individuals. These tests lay stress on the tasks that can not be performed verbally In other words it means that the answers given by the subjects are in black and white or written. There i more use of the language and so these can be applied on the child and the persons who are adopted and can make the use of the language in a more efficient and effective manner. These tests are applied on the persons who are not at all adapted, it' is quite possible that the result may be of a uniform type and the actual results may not be available. There are various types of tests that fall within this category. In these tasks, certain tasks are assigned to the subjects in which they have to answer by themselves. Given below is a list of non-verbal individual intelligent tests:

(1) Picture arrangement,
(2) Picture completion,
(3) Block design,
(4) Object assembly, and
(5) Digit symbols.

Some of these non-verbal intelligence tests are also intended at testing the level of the intelligence of the adults. Given below is a brief description of some of the no-verbal intelligence tests that are generally made use of

(1) Performance of Intelligence Tests

It was Munn, the well-known psychologist, who said that these tests should be applied in cases where there is possibility of the least use of the language. In this test such items are used for testing the intelligence, in which there is some use of the performance than the language. Through this test it is possible to measure the intelligence of the child, illiterates, foreigners and persons having sub-normal level of intelligence. Generally : (a) Pinter Paterson Performance Scale, (F Porteus Maze Test, (c) Form Board Test (d) Wechsler Bellevue Test are examples of these tests. It would be worthwhile to give a brief description of these tests

(a) Pinter Paterson Performance Scale

It was introduced by Patterson in 1917. It consists of 15 types of tests, out of which seven are, Form Board, 6 picture completion, memory span, picture puzzle, immitation etc.

(b) Porteus Maze Test

Another example of the performance intelligence tests is the Porteus Maze test. In this test the subject is given a piece of paper on which a Maze has been printed and a pencil. Porteus designed it for the children of the age group of 3 to 14 years. This Maze differs and get more comp1ica with the development in the age. In this test, the child or the subject is given 2 chances, to perform the test or complete the Maze. If he fails both the times it is presumed that his intelligence levels is not of the age level. Children between 12 to 14 years of a e are given four chances.

This is an improvement on Binet-Stamford-Test. In this type of test attempt is made to test the personality and the nature of the child' as well along with the intelligence level of intelligence quotient.

(c) Form Board Test

Seguin and Goddard have designed Form Board Test with the help of which the intelligence of the child is tested. In this test, the Form Board consists of blocks of various sizes and there is a board in which there are holes according to the shape of the blocks. The subject is required to fit these blacks in the holes specially designed for them. The number of attempts made and the mistakes committed are noted down and later on the on the score is found out.

(d) Wechsler Bellevue Test

This test was originally designed in 1919 for testing the intelligence of the subjects between age group of 10 to 60 years. It is said to be the most dependable and reliable type pf the test which has succeeded in case of the adu1t In this test there are 6 v and performance sub-tests. In. this there are different types of indices according to the abilities. The Bhatia Battery of Performance Test and certain other tests are these types of tests.

(2) Evaluation of the Non-verbal Intelligence Tests

These tests are helpful in finding out tile level of intelligence of various individuals and groups. They are scientifically methods but they suffer from the following drawbacks

(a) Time Factor

These tests take a lot of time. It is not possible to find out the intelligence quotient of individual or groups at a fast pace, because of too much consumption of time a lot of resources are consumed in finding out the level of intelligence of a few persons. For a poor country India and for the countries that are anxious to find out the intelligence quotient quickly this is not at all a very effective and useful method.

(b) Trained Hand

These tests require a large number of trained hands to handle them correctly and effectively. This again requires a lot of

resources and training. It may not be easy, particularly for a poor country like India to afford such a large number of trained hands. It is also quite possible that a large army of trained hands may not be available.

Inspite of these draw backs, their importance and effectiveness can not be minimized. In many conditions intelligence tests are inevitable. In short it may be said that inspite of draw-backs these tests are the most effective available means of testing the intelligence level.

VERBAL GROUP INTELLIGENCE TESTS

In order to minimise the difficulties faced in individual tests groups tests have been evolved. In these tests certain groups are put to test and they are given uniform instructions and uniform tasks. Their quotient is also found out. Here instead of the individuals machines are put to use and they give out the results.

These tests were for the first time used in 1917.18 for testing the intelligence level of the army people. They were known as 'Army Alpha' and 'Army Beta' tests. Army Alpha Tests were applied on the group of the soliders who were literate and Army Beta Tests were applied on that group of soliders who were illiterates. As a result of these tests it was possible to find out the age of the soliders who were sub-normal in intelligence, normal and skilled and having tendency and capacity to administer. Since these tests proved to be useful in the First World War they were later on applied to. Second World War. Since a good deal of time has passed, certain improvements were introduced in these tests and the Second World War they were classified under the following two heads-

(1) AGCT or Army General Classification Test, and

(2) NGCT or Navy General Classification Test.

In these tests, the subjects were tested in vocabulary mathematics, block counting etc, Now these tests have come to

be applied to the students of schools and colleges as well. They are used in determining the power of reasoning, imagination, ability of distinction, numerical ability, vocabulary etc.

SOHAN LAL GROUP INTELLIGENCE TEST

This is an Indian edition of the verbal group intelligence test which was prepared by Dr. Sohan Lal. The credit for these tests go to U. P. Psychological Bureau. This test is designed for the age group of II, 13, 15, etc. and accordingly the tests are prepared. These tests are intended at finding out the intelligence quotient of this age group of students. The main object of these tests, as already stated is to test the power of reasoning, imagination, distinction, numerical ability, vocabulary, etc. In Sohan Lal Test certain test blanks or charts are distributed to the students.

EVALUATION OF THE VERBAL GROUP INTELLIGENCE TESTS

Verbal group intelligence tests, as already stated, are intended at testing the intelligence of various groups of children. They are applied to the groups as such. Their object is to find out the intelligence levels of a particular group. These tests are the most scientifically k tests for finding out the intelligence quotient of various groups. They suffer from certain draw-backs that are enumerated below

(1) Difficulties regarding the subject

For successful completion of the verbal group intelligence test, the co-operation of the subjects is a p e-requisite. in these tests it is not possible to find out whether the subjects are actually co-operating or not.

(2) Balance of the Subject

In group tests, it is necessary that the subjects’4tould act in a balanced manner and furnish the answer with perfect balance of mind. It is not possible to find out whether the subjects are furnishing the answer in a balanced body and in a balanced emotional state.

(3) Ease and Convenience

The results of the groups tests can be successful only if the subjects put forward their answers with ease and convenience. Ease and the convenience of the subjects is, therefore, a necessary condition for reliable results. It is not easy to find out whether the subject is at ease while he is going to group test.

(4) Possibility of Immitation and Copying

In group intelligence tests, since groups are given the test it is quite possible that they may copy out the results from others or immitate as the results are out.. Such a situation would destroy the results. If a particular 'member or the group is able to find out the correct results from another member of the group, his intelligence quotient shall remain undiscovered.

Inspite of these draw-backs, it can not be deined that these tests are a sure method of finding out the intelligence quotient of certain groups. Many of these difficulties can be removed by putting tests into actual practice.

NON.VERBAL GROUP INTELLIGENCE TESTS

The verbal intelligence tests are meant only for the literates because of the requirement of linguistic ability. It is for this reason that the non-verbal group intelligence tests have been evolved. These tests are intended at finding out the intelligence quotient of the literates. In verbal tests there is less use of the written language or power of expression and more use of expression. But in the non-verbal group intelligence tests the tasks are such that the subjects have to exercise more the power of doing things in black and white and less use of the verbal or power of expression. Given below is a list of non-verbal group intelligence tests.

(1) Catell's culture Free Test

In these tests certain figures .are provided to the subjects by way of tasks. In these figures or squares certain figures are drawn while other squares are left blank. In the blank squares subjects are required to put such drawings or figures that may be related to others.

The subjects may be able to give out proper performance. It is necessary that proper instructions in simple and easily understand able language should be given to the subjects. These instructions and performances should involve least possible use of language ar power of expression. In these, tests, the subjects are required to draw certain figures according to their ability.

(2) Chicago Non-verbal Examination

These tests are meant for children of the 6 years of age upto the adults. They have proved to be very useful for the children of the 13 years of age. They have not proved very successful for people beyond this age. In these tests, symbol digits perception of similarities, classification of object's I block counting, paper form-board, picture arrangements, matching figures etc. are some of the takes that are given to the subjects to performed.

(3) Dear Born Group Test Series

These series in fact include a large number of tests and they are designed for the children of the age group of 5 to 12 years.

(4) Pidgeon's Non-verbal Intelligence Tests

These tests were first designed by Pidgeon, the well known psychologist of England and so it is named after him. It consists of following 4 types of tests:-

(a) Perceptual speed, (b) Similarities, (c) Anology; and (d) series.

(5) Raven's Progressive Matrices

In these tests there are matrices that go on getting more complicated as the progress is made. They are arranged serially according to the difficulties and omp1ications. It is in fact a sum of 5 parts and each part certains about 12 stages of examination. These tests are intended at finding out the intelligence level or IQ of certain groups.

EVALUATION OF NON-VERBAL GROUP INTELLIGENCE TEST

These group intelligence tests have certain qualities and they also suffer from certain draw-backs. Inspite of these draw-backs these tests are of great use in finding out the intelligence level of the group of certain individuals. They have been designed for certain groups and these groups are not necessarily the groups that are literate. The characteristics of these tests are enumerated below

(1) Comparison between different groups

As a result of these tests are attempt is made to test comparatively the intelligence levels of various groups. In verbal tests the language is the first hurdle but in nonverbal tests this hurdle is removed and so people speaking .different languages can be put in one group and their intelligence may be tested.

(2) Possible to test illiterates

Verbal tests can not be applied on illiterates but non-verbal tests can very easily and successfully be applied on illiterates. These tests have yielded a good result when applied on illiterate as well.

(3) Testing of the Intelligence of the Children

Children do not have a rich vocabulary and their knowledge and ability, of the language is also poor. If verbal tests are applied to these small children they may not be able to give proper results .Non-verbal tests are, therefore, useful for small children as well.

Good for Certain Groups

These tests are very successful in finding the intelligence quotient of certain groups. They- have proved to be of more use for people of certain groups and so it has been possible to provide these groups proper guidance and councelling. These tests are not free from draw-backs, but on the whole they are a scientifically planned and successful method of finding out the results about the intelligence of certain groups.

Q (3) What are The types other than the Intelligence Test that j help in sing the intelligence, ability and aptitude of children Give a brief description.

OTHER TESTS

Apart from the tests intended at testing the intelligence level of the individuals, there are certain other tests that are aimed at other qualities such as interest, special abilities, aptitude etc. It would be worthwhile to study these tests a bit in detail. Generally these tests are.

(a) Tests for assessing special abilities, (b) Tests for evaluating interest, and (c) Aptitude tests.

(a) Tests for assessing special abilities

Individual differences are now a recognised fact. Various children have various abilities and so they have to be given the choice of different curricula.. Linked with the level of intelligence are the special abilities play a vital role in life. Sometimes several complications arise because these special abilities are not taken into account. Psychologists have, therefore, designed tests for measuring and assessing special abilities.

Age and Special Abilities

Special abilities do not grow all sudden. There are different stages of age when these abilities grow. During childhood, it is not possible to find special traits or a They grow and express themselves with the growth of the child. There is difference of opinion among the psychologists about the age growth of special abilities. Cyril Burt has held out the view t it is at the age of 13 years that special abilities show themselves while Dewey was of the opinion that special abilities start showing themselves at the age of 11. It is Dewey who is more the field of psychology and so education system is so designed II diversification of curricula starts at the age of 11. It means special abilities should not be observed and tested before the c has reached 11 years of age.

What are the various special abilities-Psychologists have been able to reach unanimity amongst themselves in regard to number of special abilities. In 1938 Thurston and his colleagues held out that there are 7 basic mentai abilities. They termed 'Primary Mental Abililies'. These mental abilities are enumerated below. Opposite to these abilities are given the letters that in them

(1) Verbal Ability - V'
(2) Number Ability or Ability of Number - 'N'
(3) Ability of reasoning - 'R'
(4) Memory - 'M'
(5) Word fluency or vocabulary
(6) Spatial Ability.
(7) Perceptual Speed or Speed of Perception

Chicago Primary Mental Test is based on these very abilities. Similarly the examination battery prepared by Psychological Corporation of a America is also based on the recognition of the 7 primary abilities. This test battery consists of the following
7 tests :-

(1) Tests for Verbal Reasoning,
(2) Tests for Numerical Ability,
(3) Tests for Abstract Reasoning,
(4) Tests for Space Relation,
(5) Tests for Mechanical Reasoning,
(6) Tests for Clerical Speed and Accuracy, and
(7) Test for Languages uses.

In order to have a clear cut idea about Thursion .Test for primary mental ability would be worth while study all these tests and battery in detail.

THURSTON TEST OF PRIMARY MENTAL ABILITY

The discovery by Thurston of 7 primary mental abilities made a good deal of change in the field of guidance and counselling

which forms an important branch of the psychology. After this discovery, greater emphasis came to be attached to special mental abilities as compared even t intelligence. It was found out that even in, people having equal level of intelligence there was a lot of difference in regard to mental abilities and also vice versa. This research gave new direction to construction of curriculam on the basis of selection of jobs. People came to realise that special abilities were more useful and helpful in selection of vocation because different abilities we rerequired for different jobs; in advanced countries like England and America, various test series were. prepared in order to test the ability of applicants to various jobs and also to that or students, Thurston prepared three test series for children of different age groups:

(1) Test Series, for the children of age group of 5 to 7 years

Thurston thought that the, children of this age group should be given tests to ascertain their power of verbal flency, their ability of number, their spatial ability, perceptual ability and their ability to perceive speed etc.

(2) Test series for the children of age group of 7 to 11 years

Thurston thought that for children of this age group there was need to test their special ability in regard to their word fluency or the ability of number, their s ability powers of reasoning, perception etc.

(3) Test Series for the children of age group of 11 to 17 years-

Thurston thought that children of this age group should be tested in the special ability of their vocabulary, power of number word fluency, ability to perceive or spatial ability, power of reasoning etc.

OTHER TYPES OF TEST FOR ASCERTAINING SPECIAL ABILITY

Apart from the three tests series prepared by Thurston in order to test the mental ability, certain other test', have also been

designed to test various types of special abilities. It would be worthwhile to study these tests also.

(1) Test Designed to test spatial ability

This test is helpful in finding out ability of the individuals to have idea about space and the far. The tests designed by the National Institute of Industrial Psychology, London which is known as 'NEIP'. Form Relation Test is a case in example. Psychological Bureau of U. P. has also designed the tests in order to ascertain the spatial ability. Minnesota Paper Form Board is also an example. It consists of 4 tests that are carried out on the basis of geometrical figures which if put together present a complete figure. Sc is the case with other tests that have been designed for the purpose. The purpose of these tests is to ascertain the special abilities of the individuals to discern space form etc.

(2) Mechanical Ability Tests

These tests are carried out with the help of paper, pencil, tools etc., and the intended to ascertain the special ability of the subject or individual in retard to emotions and other mechanical matters. Minnesota mechanical matters. Minnesota Mechanical Emotional Test is a very good examples of this test in which three different mechanical objects are placed in three separate boxes. The subject is to draw figures by Mechanical Comprehension, Mac-Quarrie Test for Mechanical Ability are also tests of this type.

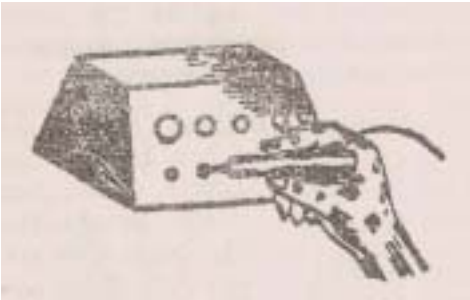
(3) Motor Dexterity Test

The main object of these tests is to ascertain the special ability of the steadyness of the figure and the hand. Those who posses the steadyness are able to undertake motor ability and also artistic and aesthetic abilities. Binet Hand- Tool Dexterity Test Purdue Peg Board. Steadiness Textor, 0, Coner Tweezer-Dexterity Test etc., are such tests. Given below is a description of such a test.

STEADINESS TESTER

It is a machine or mechanical device aimed at testing the steadiness of the figures. The figure of this tester is shown in Fig 12.

It is a box like board in which there are different holes that go on becomming smaller. The subject is required to put the testing instrument called Stiller in each of them and to take it out. If during the process of test, stifler touches the board there is a ring and this indicates that the subject lacks steadiness of the fingers.



The subject is given three opportunities to insert the steller in the whole and take it without touching the board. If he succeeds he is said to be fit for mecanical works.

CLERICAL SPEED AND ACCURACY TEST

This test which consist of certain arithmatic questions is for examining the vocabulary and accurate writing etc. The object of this test is to ascertain the clerical accuracy and ability of the subject. These tests are based on perceptual knowledge. Minnesota Clerical Test is an example of this type of test. This test has two parts one consists of the total of certain figures and the second one consists of the figures. The subject is required to take the correct figures and total. If his marking is correct he is said to be fit in clerical job.

TEST FOR ARTISTIC OR AESTHETIC ABILITY

These test are aimed at ascertaining the aesthetic bility of the subject. Mc Adory R Test, Seashore measure of Musical

talents, are these types of tests, whose object is to test the artistic and musical talent of the subject. Meir Art Judgeinent Test is another test of the types which consists 100 pairs of the picture. In each pair, one picture is original and the other one is its copy. From every pair the subject is required to take out the original picture. If he succeeds and is able to distinguish the aesthetic beatuy of the original picture or the immitation, he is said to be a fit person to undertake aesthetic and artist jobs.

TEST DESIGNED TO EXAMINE THE INTEREST OF TEST OF INTEREST

These tests are designed to ascertain the interest of the individuals. People take to jobs on the basis of their interest. This we see in case of students as well. Some of the students are interested in mathematics while others are in history. if through psychological tests, the interest of the educants can be ascertained, it would help in providing them counselling. Similar is the case the vocations and occupations. On the basis of knowledge of interest, people can be guided suggest certain vocations in which they shall do well. Interest can not be ascertained by shear guess work or by enquiries.

They have to be ascertained through scientific methods. Several psychologists have designed test to ascertain the interest of the students one such test is called Check list of Occuations' of Margaret E. Hoppock. In this test a list of Occupations is given. The subject is required to mark a sign against the occupation in is interested. This enables the psychologist to know the interest of the subject in particular vocation or Occupation.

STRONG'S VOCATIONAL INTEREST BLANKS

This is a more scientifically designed test in which an attempt has been made to draw out interest a well as the different aspects of the personality of the subject In Strong's Vocational Interest Blanks, there are different blanks designed for males, females,

boys, girls etc. in which the subjects are required to give out answers to certain queries: Through these queries attempt is made to find out the relative interest of different occupations.

CUDER'S VOCATIONAL PREFERENCE RECORD

In this test there are in all 60 item groups. Each of which consists of 3 items, each of which indicates a separate vocation. The subject is required to indicate his maximum and the last choice. This is a very simple method through which is possible to find out the interest of young boys and girls in different vocations.

On the basis f the marks of these regards, a chart is drawn which indicates which boys or students would achieve such vocation- This helps the parents as well as teacher to provide guidance and counseling to their wards.

OTHER INTEREST TEST

Apart from the described above, there are other tests also that are intend at ascertaining the interest to different subjects in different vocations. In this regard the characteristics of different vocations, actual actions that need to be performed and the description of the interest required are given. The students have to indicate their rnaximum, normal and ordinary choices, On the basis of the indication given by the educants. A profile is drawn and on this basis of this profile it is possible provide guidance and counseling for future. One such test is Dunlop's Academic preference Record. The Vocational Preference Record designed by Bureau of psychology U. P. is. an example of this test. The list or record consists of the activities or vocations on concerning different walks of life, The subject is required to this choice whether he is interested In:-

(a) Out-door jabs (b) Mechanical jobs, (c) Computational and mathematical jobs, (d) Scientific jobs, (e) pursuasive jobs, (f) Arttistic, literary and musical jobs, (g) Social Service, and (h) Clerical.

Utility and evaluation of rest of Interest- different tests designed for ascertaining the interest of the subjects have certain limitations. They can not be said to very scientifically planned and are bound to be very successful. The limitations are governed by the following characteristics of the interest as well as the vocation and occupation.

(1) It is not possible to draw a comprehensive list of vocations

There are hundred and thousands of types or subtypes of vocations. It is not possible to draw comprehensive list of these vocations and so any subject can be made o face a list of vocation why is complete. Because of this difficulty it is not possible to draw a list of all the aptitudes that are required for different vocations and occupations. What to talk of, psychologists even persons engaged and responsible for different vocations can not given comprehensive picture of this own profession and so the test of interest can not be said to be complete.

(2) Answers are not necessarily accurate

The profile of the interest of the subjects in different vocations is drawn on the basis of the answers given by the subjects. It is not necessary that all the subject shall present complete and comprehensive answers which can be hundred percent dependable. This creates doubt about the utility of test of interest.

Changes Interest - Interest is ever changing phenomenon. It is not a permanent quality of the personality or character. With the change in interest the change in the liking for a profession take place E.G. a person has not taken to motor mechanism develops an interest in motor mechanism, he can very easily shift his profession and also liking for a profession.

Success is n inevitably governed by interest—Psychologists have come to the conclusion that it not at all possible to predict about the success of certain individuals in certain occupations. It

has also been observed that interest in a particular vocation would not necessarily bring success to him. Sometimes there are other factors that govern the success in certain professions and also interest in certain occupations. Therefore it is not possible to draw very scientifically planned tests for ascertaining the interest of the Individuals.

Scientifically Classification Occupations Not Possible-It is not possible to draw a scientifically planned, and comprehensive list of the occupations and vocations and so, it can not be said that a particular vocation requires a particular interest. This has an effect on test of interest.

All these drawbacks only show the limitations. In tests of interest academic and vocational preference records are useful methods of ascertaining the interest of subjects in certain occupations and vacations. They do provide a idea about the in1 of the subjects and help the psychologists to provide proper guidance and Counseling.

APTITUDE TEST

Aptitude test is helpful in achieving success and efficiency in a particular vocation or occupation. If a person secures first class and over first class marks in mathematics it indicates that he is not only interested in that subject but also has. aptitude for it. Similarly if a person has achieved efficiency in motor mechanism it means that he has an aptitude for it. There are methods for ascertaining the aptitude. These methods are terms a. aptitude tests.

IMPORTANCE OF APTITUDE TESTS

These aptitude tests. Helpful in providing proper guidance and counseling to the subjects to take to certain vocations.-On the other hand they -helpful selection of proper persons and proper jobs.

Various aptitude tests have been de various psychologists. Crawford small Parts Dexterity toxic an example of such a test. This test is intended at ascertaining the efficiency of the subject in certain tasks. In this test the subject is required to pick-up a pin and place it in the proper hole and put a coller over it. Thus he puts proper pins improper holes. Then he is required to put screws and put them in proper hole tries to drive them properly. First he does all this with the he1y of fingers and then with the help of a screw driver. This process continues till all the screws are fixed up.

This test is intended at testing the dexterity and steadiness of the fingers in taking up mechanical jobs. Similar tests may be used for other occupations.

INTELLIGENT QUOTIENT

Q (4) what is intelligent quotient? How is it measured?

Intelligence is measured through tests and the results that are available are termed as intelligence quotient. Intelligence quotient is nothing but indication of the level of intelligence. This process was for the first time used in 1916 by Stanford Binet Test.

Intelligence quotient is the ratio between mental age or MA and the actual or chronological age.

Chronological age is determined on the basis of the date of birth while the mental age is ascertained on the basis of the test e.g if test the a score of the subjects of 12 years of age is 80, all the subjects or the boys Who scure this score shall be said to possess the average intelligence quotient. But if a boy of 11 years of age secures this score this score he shall be said to be above average considering his age. His mental age said to be 13 years. On the other hand if a boy of 14 years of chronological age is able to scure only 80 markes which are prescribed for boy of 12 year of age he shall be called below average and his mental age shall be

rated at 12 years. In some cases the mental age does not increase with the actual or chronological age. Normally it should go up This is why intelligence quotient is very important. The formula intelligence quotient is given below :

$$IQ = \frac{MA}{CA} \times 100$$

This can be explained further by an example. Suppose a boy of 12 years has mental age of 10 years his IQ shall be find out as given below :

$$\frac{10}{12} \times 100$$

In this manner his IQ found and it shall be possible to provide him with proper guidance and con Intelligence quotient is helpful in providing guidance conselling to the students and other people. Limitations of the concept of intelligence quotient - Intelligence quotient is neither completely a gift of the hereditory nor of the atmosphere. It is in fact a result of the cca of the heredity as well as environment. Environment plays a vital role in it. This can be very well understood while we look at the limitations that govern the concept of intelligence quotient. They are enumerated below

(1) Intelligence quotient is not quantum of intelligence-Intelligence quotient does not indicate the subject possesses the same total of the intelligence as id by the intelligence, quotient Quantum of intelligence may differ from the intelligence quotient.

(2) Intelligence quotient is not 100 percent accurate-The intelligence tests are a method for ascertaining the intelligence but they cannot be said to put forward 100 percent accurate results All the tests do not give out the same or uniform intelligence quotient. That is why they cannot be said to be 100 percent accurate.

(3) Nobody has zero intelligence M out intelligence quotient easily we start from zero but in actual life no one has zero intelligence. The calculation from zero is therefore not correct.

(4) Various is three years-On the basis of intelligence it has been found that intelligence quotient varies at1east with three years. It shall therefore be wrong to take intelligence as a permanent affair. Stability of the intelligence - quotient varies at least within a period of the three years. It is therefore, a clear proof of the .fact that intelligence quotient varies and changes. It is not always stable. As a result of different tests we also come to the conclusion that different results are found as a result of different tests. If the same test is applied to the same subject, on several occasions the inte1ligence quotient shall not always be the same. It shall differ from occasion. This variation differs from tests to tests e.g. in Weshler-Bellevue Test this variation is upto 5 points and in: Stanford Binet Test this variation is up to 4 points. Similarly in other tests this varies differs from test to test.

Intelligence quotient of all the subjects is not always stable - Intelligence quotient of all the subjects is not always the same. In some cases, it changes and varies at a very fast pace. As a result of this intelligence quotient changes.

Intelligence quotient changes as result of change in environment - Intelligence is the results or hereditary as well as environment. After birth it is not possible to make any change in the heredity, but change in environment does take place. As a result of this change the intelligence quotient Changes. Garret the well known psychologist statistician has, found out that as a result of improvement and deterioration in the environment variation to the extent of 10 takes place.

Classification of various categories of people on the basis of at intelligence quotient given by Garret—Garret in his book ‘Great Experiments In Psychology’ has made the following classification.

On the basis of their percentage in the population.

	Intelligence quotient	classification	Percentage
1.	140 or above	Very Superior	1.5
2.	120 to139	Superior	11.8
3.	110to119	Bright	18.0
4.	90 To109	Average or normal	48.0
5.	70 to89	To Dull or Backward	14.0
6.	70 to 79	Very Dull	5.0
7.	0 to 69	Feeble minded	2.5

OTHER FACTS ABOUT INTELLIGENCE QUOTIENT

On the basis of' the experiments carried out by various psychologists in regard to inteJ1ir quotient certain factors have also come to light. They are

1. Possibility of Increase in IQ as a result of rise in social and economic standards-Once there is a rise in social and economic standards, there is likelihood of the IQ going up. On the other hand there is a fall in social and economic standards, the IQ may go down.

2. Intelligence quotient goes up Slowly-Intelligence quotient does not rise all of a sudden, It goes up slowly. Experiments have also shown that between the age group of 4 to 14 IQ general1y remains stable. It rises after 14.

3. No like between success in school work IQ- Experiments have also shown that there is no relationship, between the success at the school and intelligence. It has been found that students having average intelligence have achieved gr r success as compared to children who had higher intelligence quotient. As. a result of this, the psychologists have come to the conclusion that there is no relationship between the success at tie school and the intelligence quotient.

4. Relationship between the intelligence quotient and fathers occupation-As a result of experiment' carried out by various psychologists it has been found that there is some relationship, between the intelligence of the child and the 'father's occupation. Intelligence quotient of the 'children of the people engaged in certain profession is higher as compared to intelligence quotient of the people of other professions. This can be attributed neither completely to the heredity nor to the environment. In fact It is influenced by both these factors. Intelligence quotient is in tact influenced both by heredity as well as environment.

CHAPTER - IV
APTITUDES

The student very probably must have come across the term: “aptitude”. You must have heard somebody remarking “you have the aptitude to become a doctor or an engineer etc”. It is also possible that he or she might have read, while going through the biographies of some outstanding persons that the concerned individuals showed strong evidence for an aptitude for music, dance, mathematics, etc. Now what does this term aptitude mean? Certainly it means an ability to acquire the knowledge and skills to excel in some specific sphere of activity like singing, repairing of machines, drawing etc. But an aptitude is slightly different from “ability.” While the term ability means that a person can do something like repairing a machine, or solve numerical problems fast, at a particular point of time and in a particular context the term aptitude means the potentiality and probability of acquiring a particular skill or doing well. A person with musical aptitude, if provided the right and sufficient training and the opportunity can become a very good singer. Thus an aptitude when identified, nurtured and supported becomes an ability. Of course this does not mean that a person must invariably have a strong aptitude for achieving a certain ability. It is quite possible that a person without an aptitude for numerical operations acquires an ability to add, subtract and multiply. People do achieve this. But they cannot reach beyond a certain level; they will not be able to excel.

Further, while a person without an aptitude can acquire a certain degree of ability in a particular sphere, he does not enjoy doing that particular job, nor is he very keen on developing the concerned ability still further on his or her own initiative. A person with a particular aptitude seeks on his or her own, Opportunities to improve his skills and abilities in a particular sphere, and not out of a necessity or compulsion arising out of circumstantial demands. It is this “aptitude” which makes the difference between

those who achieve mastery or excellence in a particular activity and others who just acquire a particular skill. Thus there are many who are musicians, but only a few of them became great. Similarly in the field of dance, there are many but some have excellence and make a name. Equally so it is also possible that there have been many people who have had strong aptitudes, but not the opportunity to develop and transform these aptitudes into skills or abilities. We do come across, many persons, who have been administrators, or engineers or police officers who, after their retirement, start developing their aptitudes in some other sphere and achieve mastery. Aptitudes are sometimes also referred to as special abilities.

The student by now must have come to appreciate the importance of identifying and measuring the aptitudes of people and also providing them with the opportunity and support to enable them to strive to achieve excellence. Any scientific and systematic effort in this direction will not only enable people to achieve excellence in the field of activity directed by their aptitudes, but also enable them to enjoy their work. The relevance of this probability to a relatively underdeveloped country is obvious. In a developing country like ours, it is important that efforts are made to identify and support special abilities or aptitudes in people so that they can achieve excellence and also become models for others.

It is therefore not surprising that a number of aptitude tests have been developed and used in different contexts. Thus aptitude tests are employed in counselling and advising students to choose their subjects of study particularly at higher levels of education. Similarly such aptitude tests are employed in career guidance and vocational guidance, practices where young people are advised on their choice of careers and jobs. Sometimes it has been found that young people choose study courses and jobs wherein they do not feel that they are doing their best, and feel frustrated. In such

instances aptitude tests are useful to identify their strong aptitude areas and help them enjoy their work, achieve their best and also contribute to social good.

The student may be interested to know that Sir C V Raman, the great Indian physicist was originally working as an officer in the Accounts Department of the Government. Fortunately the great Indian educator Sir Asuthosh Mukherjee identified his talents as a physicist and encouraged him to shape his career. Srinivasa Ramanujam, the great Indian mathematical genius, was a clerk in a small government office. It was Prof. Hardy of Cambridge University who identified his aptitude for mathematics and supported him. An interesting fact is that in some cases the individuals are aware of their aptitude as in the case of Ramanujam, in other cases they are not. It is in the instances like the latter that aptitude testing particularly assumes more significance. The authors remember very well the case of a very brilliant student who due to parental pressure, and the social value system which prevails in our society, was made to take admission into an engineering course. The young student did not fare well and was unhappy. The parents felt that this was because the particular college where he was studying was not good enough. In view of this, he was persuaded to join one of the prestigious Indian Institutes of Technology (ITT). The student being brilliant easily cleared the Entrance Test and got admitted. But all the same the story repeated itself, as he could not do well at the lIT. The student decided that his aptitude was in fields like economics, management and started all over. After completing his degree course in economics he got admission to a very prestigious Institute of Management Studies. His performance was outstanding and today he is a very highly accomplished and respected “Management Consultant.” But here you will find that had an attempt been made to identify his strong aptitudes earlier, a lot of trouble and wastage of time and resources could have been avoided. As the parents were enlightened and affluent also, the wrong action could be

corrected. But imagine how many young people from less enlightened and less affluent homes have to suffer and pay a heavy price for one wrong decision, or a failure to arrive at one correct decision.

SOME APTITUDE TESTS

The recognition of the importance of aptitudes and aptitude testing had led to the development of a number of aptitude tests which are very widely used in educational guidance, vocational guidance, vocational selection, career planning, career counselling and many other fields. Such tests however fall into two broad categories. These are as follows: First we have certain aptitude tests which attempt to measure whether an individual has an adequate level of aptitude in a particular sphere of achievement. These tests measure a single aptitude in an individual. Some such tests are the Bennet Mechanical Aptitude Tests, the Seashore Musical Aptitude Test, the NIIP Clerical Ability Tests, etc. Similarly we have the Moore Engineering and Physical and Scientific Aptitude Tests, etc. Here, only a particular aptitude area is explored by the test and a measurement of the individual aptitude test is arrived at. Such tests answer the question whether an individual has a high or low aptitude in a particular sphere. The results of such tests help an individual make a tentative decision to join a particular course, or take up a particular vocation and then try to verify and confirm whether he or she has a particular aptitude before putting the particular decision into action.

The second type of aptitude tests are different. They are multi-aptitude or Differential Aptitude Tests. These tests include a number of sub-tests in a battery and attempt to arrive at a profile of the different aptitudes in an individual and indicate how strong these aptitudes are. This will enable an individual by himself or with the help of a counsellor to compare the strengths of the different aptitudes and arrive at a decision taking into account a number of other factors like health condition, opportunities

available for acquiring the necessary skills, the cost factor and many other social and personal factors. Thus a particular young person may find that he has a very strong aptitude for engineering studies, followed by aptitude for mathematics. But it may be that the person has some physical handicap and cannot take the strain of engineering studies or engineering education may take too long and involve a high Cost. Under such a condition for studying mathematics. Here, one may see that the measurement of aptitude precedes the decision and helps the individual in arriving at a decision from among different possibilities and taking into account a number of other factors. Some such well known tests which measure different aptitudes are the USES General Aptitude Battery and the Differential Aptitude Tests developed by Bennet and others, the multi-aptitude tests, etc. The Differential Aptitude Test, one of the widely used tests in India includes abstract reasoning, verbal reasoning, language usage, numerical reasoning, mechanical reasoning, spatial relations and other sub-tests. These tests include a number of sub-tests, which either individually or in small clusters, from among all the sub-tests give a measure of different aptitudes. Some tests like the Differential Aptitude Tests also give a measure of general intelligence scores based on two or three of the sub-tests like language usage, abstract reasoning and verbal reasoning in combination.

In this section, an attempt has been made to bring to the students a brief account of aptitudes and aptitude tests. Aptitudes are generally acquired through experience, modelling, etc. The development of aptitude is very much influenced by early childhood observations and experiences. We find music, dance and other forms of art appear to run in families. The evidence seems to be almost conch. that aptitudes are environmentally determined though some claims have been made that in the case of some aptitudes like musical aptitude there is a role of hereditary and genetic factors. Yet another feature is that while intelligence is purely a cognitive ability factor, in the case of aptitudes emotional

factors and neurosensory motor factors also play a role. Sometimes aptitudes are described as sensory motor dispositions. Intelligence is mostly based on the higher nerve centers, particularly the cerebrum, while aptitudes necessarily involve motor activities and therefore psychomotor coordination. While intelligence or general mental ability is purely involved in finding answers and solutions to a problem, aptitudes are more involved in expressive activity. The student may remember that while discussing the nature of intelligence, a mention was made of "specific factors". However, while these two are different one may find that there is a fairly higher degree of involvement of specific factors in aptitudes. This does not however mean that intelligence and aptitude are not related. A minimum level of intelligence is essential even if the aptitude is high. Further, in any field of activity, as the complexity level of operations increases, the involvement of general intelligence also increases significantly.

The student may recall the rather lengthy discussion on the various factors involved in measurement and interpretation of scores obtained on intelligence tests earlier in this chapter. Most of it holds good for aptitude testing also. Thus, it isnecessary that an aptitude test also satisfies all the requirements of a good intelligence test. The only difference is probably on the issue of definition of an aptitude. In the case of an aptitude, it is probably easy to attempt a more objective definition which carries consensus if not total agreement. Secondly, the use of aptitude test is more limited than intelligence tests. Generally aptitude tests are ed only for admissions to educational institutions and selection for jobs. Further the role of the language factor is definitely less in the case of most aptitudes, unless one is testing what is often reference to in terms like Scholastic Aptitude, Linguistic Aptitude, Verbal Aptitude, etc.

CHAPTER - V
MOTIVATION

Our behaviour is often expressed in the following terms: I want to do this; or I do not want to do that; I desire to say this; I said this because of this and so on. Where do all these things come from? What is it which makes one say or do such things? You may say that the answer is simple; it is something within us which arouses or pushes us to say or do such things. This process, i.e. the force that helps action along a particular direction and towards a particular end in the organism, is technically called motivation. This chapter tries to provide answers to two main questions - What are the prime motivators of human behaviour? How will this knowledge of motivators help us?

Philosophy and history show that man has always been curious to know what moves or motivates human beings. Countless number of philosophers and scientists have tried to solve this mystery of motivation. But as a matter of fact no conclusive answer has been provided even today. The explanations of motivation presented by different philosophers and psychologists have only suggested possible answers, but are nowhere near certainty. Their methods of study and investigation were different from one another. On account of their different ways of approach and appreciation they produced different theories. These theories are discussed under different approaches or models according to their nature and the tradition from which they came up. The reader may come across concepts which he has already been acquainted with, but it should be borne in mind that they will be discussed here in the light of motivation. All these theories, despite their differences and disagreements, offer rich and systematic infonnation. Thus, each theory could be considered as a small step taken by psychology before taking a big leap towards becoming the science of understanding mankind. However, inspite of disagreement over theoretical concepts, theorists show agreement

fortunately on one thing, i.e. the definition of motivation. Thus, motivation is commonly defined as, conditions within the organism (both human and animal) which arouse, maintain and direct behaviour towards a specific goal. This definition can be clarified by the following illustration. A hungry lion in a jungle goes around roaring and hunting for its prey. Here hunger or the condition of food deprivation arouse reactions like hunger pangs, roaring, physical movement, etc. The restless movements of the animal will be maintained as long as the stage of deprivation persists. It will neither eat grass nor fruits to satisfy its hunger. When it spots its prey the whole behaviour gets coordinated, its vision and posture get set and directed to take a cautious and accurate leap to catch the prey. Eating reduces its state of deprivation and, thus, the goal is achieved.

MODELS OF MOTIVATION

Attempts to explain motivation have been inspired by different models. Some scientists assumed that motivation essentially derives from biological and organic factors and developed explanations modelled after the behaviour of lower organisms. Such models are termed animal models. A few other scientists were inspired by the observation of working of the machines which depend entirely on external energy and behave as they are made to behave. Such explanations are termed machine models. Psychoanalytic theories, with their emphasis on unconscious motivation, to a certain extent combined the features of both the animal and machine models. However, certain new features were introduced like the long-term effectiveness of motivation, like childhood motivation and also possibilities of disguised and distorted expressions of motives. In view of these, there emerged a third model that of unconscious motivation. This model, though retaining some features of the two earlier models, went beyond and pointed out the complexities involved in human motivation. In the course of time some psychologists began to criticise all the above three models and pointed out the need to

explain human motivation on a basis totally different from those of animal or machine behaviour. To the extent that the unconscious model retained the features of the animal and machine model, it also came in for criticism at the hands of these psychologists. In turn, they came up with a model which has come to be known as the humanistic model. These four models are dealt with in this chapter.

ANIMAL MODEL

Charles Darwin's theory of evolution has formed the basis for much of our understanding of living creatures. It completely destroyed the distinction between animal and human behaviour explained by Greek philosophers like Plato and Aristotle who said that knowledge and 'will' are the prime motivators of human beings. Jeremy Bentham and J.S. Mill said that whatever gives great pleasure becomes a motivator. However, Darwin's theory was the first to show the world with empirical support that the basic processes in both human beings and animals are the same. It indicated that all human behaviour, like animal behaviour, can be best explained only in terms of instinctive forces. This concept of instincts was employed to explain behaviour first by William James and later by McDougall who popularised it and made it universal. Then, for nearly twenty years, it remained dormant and unable to face the glare of other theories. This concept was restored by Sigmund Freud and to this day it enjoys the status of one of the master principles of psychology and of motivation in particular, at least historically.

WILLIAM JAMES THEORY OF INSTINCT

James defined instinct as, "the faculty of acting in such a way as to produce certain ends, without foresight of the ends and without previous education in the performance." For example, when the nostrils of a new-born baby are touched lightly with a feather or cotton the result is a sneeze. Here, the baby sneezed without realising it and without having the knowledge that this

act would provide r 1mm irritatiom Jamces aimcii that instincts among men are both actiOns aroused within the person and actions that take effect on the outer world. In the former he considered things such as o lmar reflexes like laughing, when tickled, wrinkling one's nose at a bad smell or taste, etc. in the later category he included activities such as ways of dressing, eating, talking, thinking, etc. which are the outcome of learning. He argued further that since man has a superior intellect he possesses few instincts of the former kind, but at the same time has many more varied instincts than animals. But these are concealed by the operation of his superior mental apparatus. Man's great faculty of learning can modify or disguise his native instinctive endowments.

MCDOUGALL'S THEORY OF INSTINCT

According to McDougall, "all human behaviour has an instinctive basis". He claimed that if it were not for instincts man would lie inert like an intricate clock with a broken mainspring. He defined instinct as the inborn capacity for purposive action. Reflexes, according to him are activities which are simple and unchanging like sneezing, blinking of the eye lids, etc. while instinctive behaviour is complex, modifiable and adaptable to changing circumstances. Some of the activities which he considered to be instincts are - food-seeking, escape, pleasure-seeking, etc. Instincts propel and direct the behaviour of the organism to achieve its goal. However, if the organism encounters obstacles, the striving merely intensifies until the goal is reached. Instinct, according to him, is constituted of powerful impulses, a striving force, goal directedness and is constantly accompanied by an emotional component. This theory of McDougall's may become clear with the following illustration: when a person is in his house and realises that it is on fire he would be driven by impulses like screaming, running, planning and trying ways and means to get out of the house. All this is possible because of the energy which is forcing him and making him strive only to get away from this disaster, which is the goal in this case. And all

through this incident he may be undergoing an emotional experience-fear, for instance.

McDougall claimed that human behaviour could be explained through fourteen instincts which are listed by him. Some of them are - parental instinct, combat (pugnacity) instinct, curiosity instinct, escape instinct, construction instinct, etc. He concluded his doctrine of instincts in the following statement, “take away these instinctive dispositions with their powerful impulses, and the organism would become incapable of activity of any kind, like a steam engine whose fires had been drawn”! At least, the steam engine may have value as scrap material.

SIGMUND FREUD’S THEORY OF INSTINCTS

According to Freud, instincts are the basic causes of human activity. An instinct is an inborn biological need or bodily demand on psychological life. For example, the state of thirst may be described in physiological terms as a condition of water deficit in the tissues of the body, whereas psychologically it is represented as a wish for water. The wish acts as a motive for behaviour and, therefore, instincts are considered as the propelling factors of behaviour. Not only do they drive behaviour but they also determine its direction and control the sensitivity for a particular kind of stimulation, e.g -a person who is extremely thirsty is more sensitive to a liquid stimulus than to food or entertainment.

Freud differentiated two basic instincts - the L instinct or Eros and the Death instinct or Thanatos. The first includes all those impulses which are involved in the survival of the individual and the species. This is manifested in the form of self-preservation by satisfying all the needs like hunger, thirst and maintenance of life and reproduction. i.e. by satisfying, sexual needs and the need for procreation. On the whole the activities of the life instinct are oriented towards pleasure and satisfaction, while the death instinct includes all the impulses which are directed either to destroy

oneself or others. Self-destruction is manifested in the form of suicidal tendencies. Destruction of other people is manifested in the form of acts of aggression, destruction, murder, war, etc. On the whole, the activities of the death instinct are oriented towards pain and displeasure. Freud claimed that behaviour from birth to death represents an interaction of these two instincts. They interact "with and against each other", thereby producing all possible combinations of effects. For example, eating, which involves the life instinct, i.e. satisfaction and pleasure, also includes the death instinct, i.e. acts of destruction like tearing, biting, etc. The commonly recognized painful experiences of sexual excitement and pleasure further demonstrate such interactions.

CRITICISM OF INSTINCT THEORIES

The flaw in the doctrine of instinct should be clearly visible to the reader. Instinct theorists have reduced man to an automation or animal activated by instincts. These theorists, observing certain types of behaviour which they believed to be characteristic of human species have declared that causes of such behaviour are innate, unchosen and unlearned tendencies which drive man to act as he does. Thus, they mentioned a survival instinct, parental instinct, and so forth. They seldom defined what they understood an instinct to be and took little trouble to explain how it functioned. They competed with one another in compiling lists of instincts which man was supposed to possess. By the end of 1924 nearly 14,046 human activities were labelled as instincts in psychological literature. This indicates nothing but a hobby that consists of creating, naming and collecting instincts on the part of the supporters of the instinct theory.

The inadequacy of instinct theory however becomes more apparent when one considers complex human activities like learning, reasoning, goal seeking, etc.

Man is certainly born with needs and instincts, but he is not born with the knowledge of those needs and instincts and how to satisfy them. Some simpler needs are satisfied by the functioning of internal organs in the appropriate physical environment; for example the need for oxygen is satisfied by the automatic functioning of the respiratory system. But more complex needs, which require man's voluntary interaction with the external world are not satisfied automatically. Man does not obtain food, shelter or clothing "by instincts". To grow food, to build the shelter or weave cloth it requires knowledge, judgement, consciousness, etc. Thus, the loopholes in this approach automatically gave way to the emergence of other theories which claimed to answer what was unanswered by the instinct theorists. A glaring weak point identified by sociologists and anthropologists is the inability of this doctrine to explain individual differences and group differences arising out of socio-cultural influences.

THE CONCEPT OF INSTINCT TODAY

The recent ethological studies and experiments of Lorenz and Tinbergen have added new dimensions to the doctrine of instincts. Their studies on fishes and birds provided extensive information on instinctive patterns of behaviour. They emphasized the importance of certain 'fixed action patterns' in animals which are distinct from chains of reflexes and which are characteristic of particular species. These behavioural patterns appeared even when animals were reared in isolation and had no opportunity to acquire behavioural patterns either through previous experience or exposure to other animals. This behaviour according to the ethologist is called Species Specific Behaviour rather than instincts or reflexes.

This specific behaviour or fixed action pattern occurs in food-seeking, hiding, avoidance of danger, defence of territory, nesting and the care of young, courtship and sexual behaviour in birds and some insects. Tinbergen found, using models he had

constructed, that the male Stickleback (a fish) would attack the crudest of models provided that its underside was red; if there was no red no attack was made. In another experiment a Herring gull chick pecked a red patch on a model of the parent's bill, but was unaffected by the colour of the head or 'bill Birds of each species have their own peculiarities in building nests. For example male baya birds are in the habit of constructing a nest with a variety of objects which are displayed to the female birds. The female birds go about inspecting the nests and each female bird selects a nest which appeals to her and enters it courtship with the owner of the nest.

HOMEOSTASIS

Scientists working in the area of psychology towards the early part of this century were fascinated by the concept of homeostasis. They borrowed this concept from physiology and tried to explain psychological processes along these lines. Claude Bernard, a physiologist coined the word 'homeostasis' to explain the stability of the inner environment or physiological equilibrium. The function of all the biological drives is to regulate and maintain the physiological equilibrium of the individual. When the internal state is disturbed the conditions propel the organism to seek activity. Such activity continues until the equilibrium is restored and this state is called homeostasis.

Many homeostatic processes are physiological and automatic, e.g. maintenance of body temperature, adequate supply of nutrition for growth and maintenance of the body and so on. Any type of deficiency can create imbalance in the organism and this imbalance leads to a state of disequilibrium. When an organism is in this state, it tries its best to restore itself to the state of balance or equilibrium. This is seen clearly when there is a tear on the body. Under normal conditions our tissues grow and patch the tear and bring the skin to its normal state. It has also been proved that a child who is deficient in salt prefers food with extra salt. Similarly,

a child who is deficient in calcium is found to prefer food with calcium content or exhibit tendencies like eating chalk, licking walls and so on.

The concept of homeostasis can satisfactorily explain the behaviour of a biological man whose needs are the same as those of animals. However, psychologists who extended this concept tried to classify this form of biological equilibrium under the heading static equilibrium or static homeostasis. This involves a limited part of the organism, mostly reflexes or chains of reflexes, where activities are controlled by the spinal cord and the brain. But the human being is more than a biological creature. Our mental capacity makes us far more complex animals. So the concept of dynamic homeostasis has been suggested to explain man's complex behaviour. This behaviour takes place as a consequence of the functioning of the cerebral cortex. Just as an organism strives to restore its balance when there is physiological deficiency so does it strive when there is psychological imbalance. This could be inferred from the processes of adjustment or ego defence mechanisms (refer to chapter on Adjustment) and other ways and means employed by human beings to resolve conflicts and reduce the tension arising out of such conflicts at least for the time being. This state is referred to as dynamic equilibrium by Kurt Lewin. Thus, it can be concluded that static and dynamic homeostasis are key concepts in understanding human motives.

CRITICISM OF HOMEOSTASIS

The concept of homeostasis has been borrowed from physics and physiology to explain psychological processes. Trying to explain psychological processes with this concept is like fixing a square peg in a round hole. Critics argue that many a time man exhibits such a variety of behaviour that it can be explained neither by static nor dynamic homeostasis. An organism might behave in such a manner that it deliberately upsets its equilibrium and destroys itself. For example, striving for adventure, revolting

against society or bringing about social reforms often means an increase in tension, discomfort and disruption of the constant state of equilibrium. Sometimes men choose death and torture to dishonour, prefer ascetic and religious experiences to the satisfaction of their hunger or thirst. So we see that homeostasis, though a valuable concept, does not give the entire picture of human motivation.

CATTELL AND THE CONCEPT OF ERGIC MOTIVATION

One of the leading psychologists who has made outstanding contributions to our understanding of several aspects of human behaviour, R.B. Cattell, employs a term 'ergs' to explain the source of motivation. Cattell regards ergs as dynamic traits or basic units of human personality which activates and makes individuals move in a particular direction. According to Cattell, such motivating traits or ergic traits which have drive properties can be either innate or acquired. According to him evidence based on biological comparative studies of higher animals, clinical studies of patients and also cross-culture studies of people from different cultures and societies point to the existence of between ten and twenty ergic drives which are characterised by "an innate preference to attend to certain objects to feel a specific emotion, to be impelled to certain kinds of motor activity and to be satisfied with a particular goal".

Cattell totally disagrees with the view that all drives or motives are caused by organic factors and also that such pure organic drives or motivation factors are more primary than ergic sources like escape, assertion, curiosity, etc. Cattell presents a list of such ergic factors under three categories; (An illustrative list)

1. Organic needs like, to seek air, to avoid pain, to seek water, and excretory needs.

2. Propensities which are organic, hygienic and appetitive: to seek stimulation, to avoid stimulation, to take food, to court and mate, to feed.
3. Propensities with no organic rhythm: to defer, to adapt oneself in the presence of superiors, to acquire, collect and posses articles which are useful, to seek, explore and manipulate, to seek the company of others, to seek sympathy and also group feelings, to assert oneself and dominate, to defend and resist any attack.

These ergic patterns undergo development and motivation and in this process, they interact with each other through processes known as fusion, subsidisation, etc. A result of these interactions is the emergence of what he would call meta ergs or acquired dynamic traits. Thus, attitudes, sentiments and values are meta ergs. Cattell spells out in elaborate detail what he calls, a dynamic subsidisation process, which is a process of transformation by which ergs get transformed into sentiments and attitudes.

A number of attitudes converge into a sentiment and ultimately these sentiments can be traced to certain biological ergic roots. Thus while the terms ‘sentiments’ and ‘attitudes’ are often used interchangeably sentiments are more enduring, general and broader, while attitudes are more narrow and specialised dispositions to perceive specific objects or events in a particular manner and are also accompanied by certain intentions to act. Cattell while dealing with dynamic traits (ergs) makes a distinction between “purpose” and “purposeful”. Every dynamic trait or erg, initiates actions with a goal or purpose. But in many instances, the “purpose” is not conscious, but in the case of interests, attitudes and sentiments, the organism is conscious of the purpose - the action is purposeful. But in the case of many basic and biological urges, the ‘purpose is unconscious’. Cattell, thus in a way certainly supports the role of ‘unconscious motivation in human behaviour.’

Cattell's concept of dynamic traits, and the scheme of their growth maturation and development were arrived at on the basis of elaborate and detailed quantitative measurement and employing the method, which is known as factor analysis. The reader may recall that Spearman, Thurstone and others employed the method of factor analysis in studying intelligence and arrived at a set of basic abilities. Cattell employed the method of thctor analysis to arrive at the basic units of personality, traits including dynamic traits, ability traits and temperamental traits.

The data used by him, include L data or life behaviour data (observed or reported behaviour in actual life situations), R-data, data based on Ratings and observations, and T-data, data based on scores obtained on psychological tests. However, in analysing and understanding dynamic traits, Cattell attaches maximum importance to L-data, or life behaviour data which is based on actual behaviour. The reader may here see that Cattell's analysis of human behaviour, particularly; the concept of dynamic traits has been one of the most thorough, systematic and elaborate attempts. His views have been influenced to a large extent, by the instinct theory, Freudian psychoanalysis, the views of Allport, Murray and others on personality and of course the use of factor analysis by Spearman, Thurstone and others in studying the nature of human abilities. It is a pity that psychologists in general had not accorded the recognition that Cattell richly deserved.

OTHER THEORIES OF MOTIVATION

AROUSAL THEORIES

These theories are based on the fact that under conditions of stimulation or excitation, there is a condition of arousal state reflected in the degree of activation of the various physiological systems. Biological drives generally lead to a state of arousal. Arousal theories of motivation, such as those of Fiske and Maddi suggest that in general people are motivated to maintain a certain optimum level of arousal.

Researcnes have shown that best performance of people in general is accompanied by a moderate level of arousal. While low arousal can result in poor performance, over arousal can be much more dangerous; this is particularly so in complex mental tasks. Thus there is an optimum level for best performance which varies from person to person, and task to task. In a way arousal theory can also help in relating motivation and emotions. Under high intensity of emotions, arousal level becomes high and emotionally aroused people also show a high degree of motivation.

INCENTIVE THEORY

The various theoretical approaches we have considered so far, instinct, drive and arousal approaches have all one thing in common. All of them emphasize the roles of internal process in the process of motivation, though they differ from each other. Incentive theory on the other hand tends to emphasize events and elements in the environment. While the former can be labelled as 'push models', pushing the individuals to move towards a particular goal or end state, incentive theories are regarded as "pull theories or pull models" in that these theories hold that environmental objects play a predominant role in pulling the individual more towards them or away from them. Positive incentives stimulate movement towards them and negative incentives, in a direction, away from them. Now when it comes to defining positive and negative incentives, there are a lot of individual variations. Thus a music programme may be attractive to some, and a nightmare for others. Similarly the value of an incentive may also change with age and many other factors. Thus, what is a positive incentive to a person as a child, may not be so when he grows up into an adult. The incentive theory in combination with arousal theory, to a large extent explains why people are motivated, even when there is no drive reduction. A person who likes hiking or mountaineering, continues to do it and there is no question of drive reduction, as in the case of the basic biological drives. They operate very effectively in what may be

called a "open system of motivation" rather than the circular models of motivation which seem to operate when basic physiological drives are involved.

OPERANT PROCESS THEORY

It was mentioned in the earlier paragraphs that incentive values change and also that arousal levels are regulated to maintain an optimal level. Based on these problems, Solomon has suggested an approach to motivation called operant process approach, using both these assumptions. This approach tries to illustrate the concept of operant processes with reference to drug addiction. It has been found that the first few instances of drug intake result in a flood of pleasure. This is followed by a decrease in pleasure and mild and unpleasant feeling of withdrawal. This in turn leads to a craving for another dose of the drug. Gradually, the intensity of the initial pleasure decreases, with an increase in the intensity and duration of the withdrawal. This again increases a desire or dependency on further doses of the drug, more to avoid the unpleasantness of not using it, rather than for the sake of the original pleasure. This approach is very useful in helping us to understand the behaviour pattern in people, which makes them attracted to dangerous and risky activities.

MACHINE MODEL

LEARNING PRINCIPLES AS DETERMINANTS OF BEHAVIOUR

A group of psychologists called behaviourists came out with a clarion call that all human behaviour, including motivation, could be explained in terms of learning principles. Only a brief note about how these theorists interpreted and explained motivation in terms of learning principles is made in this chapter. For a better understanding of this model the reader is requested to refer to the chapter on Learning. E.L. Thorndike explained that behaviour or activities initially occur randomly and haphazardly. In the course of time, if a particular activity gives satisfaction or success then

there is a tendency for that activity to get established or fixed On the other hand when a particular movement or activity does not yield the desired results the feeling of disappointment and dissatisfaction leads to the discarding of that particular activity. Thus the ‘stamping in’and ‘stamping out’ of any activity depends upon the consequences or effects that activity produces (law of effect) With further experimentation these concepts were transformed from satisfying state of affairs’ and ‘an annoying state of affairs’ to ‘reward’ and ‘punishment’. Later reward and punishment were highlighted by the other behaviourists and considered as prime and potent motivators of human beings

Supporters of classical conditioning principles (Pavlov’s experiments on conditioning) claim that conditioning is the only principle by which all behaviour takes place and motivation is no exception. Conditioning sets in at infancy and continues until the individual reaches the last stages of life. Since all activity or behaviour as a whole is reduced to learning or conditioning, even elementary processes which initiate or motivate activity belong to this.

Clark Hull’s theoretical concepts called drive, drive reduction, primary and secondary reinforcement and incentive made a direct impact on the explanation and understanding of human motivation.

B .F. Skinner, in his theory of operant conditioning or instrumental conditioning explains that the organism operates or behaves in the environment because of reinforcement. This is clearly demonstrated in our daily life. When you have to teach your dog or child a few tricks, such as fetching things, sitting up, dancing, etc, if correct responses are reinforced with food or reward and incorrect responses are either ignored or punished, the occurrence of selected responses can be increased and the occurrence of incorrect responses can be decreased. Skinner’s

major contribution to motivation is his concept of primary and secondary reinforcers which are associated with primary and secondary drives. His idea of schedules of reinforcement added much more strength to the concept of reinforcement. Thus, reinforcement is considered to be the essence of human motivation according to Skinner.

CRITICISM OF THE MACHINE MODEL

The machine model which is essentially based on learning theories distinctly contributed to our understanding of motivation is considered by critics as narrow, too ordinary and inadequate to explain human behaviour or even animal behaviour completely. One gets an impression that the behaviourist viewed man as an 'organic machine' bound by two knobs called stimulus and response within which all the psychological processes take place including motivation. Critics consider reward and punishment as components of behaviour which facilitate motivation rather than act as motivators or springs of action.

Pavlov's principle of classical conditioning accounts for reflexes in general and the acquisition of habits to a certain extent. However, when total behaviour is taken into consideration reflexes constitute only a fragment of human behaviour and this was considered as a major drawback of this principle. According to gestalt psychologists, behaviourists first ask the subjects to step out of their consciousness and try to convince them that they are machines and that in order to emerge as better machines; they have to establish stronger connections of stimuli and response. They accused Watson that in his over-enthusiasm for making psychology resemble the physical sciences he degraded human beings who were already reduced to animals by instinct theorists into machines. A powerful argument against Skinner is that his experiments were generally conducted on simple organisms like rats and pigeons with simple environmental conditions. This artificial type of simple experimental situation rarely occurs outside

the laboratory. Behaviour, both of animals and human beings which occurs outside, is more complex than the behaviour which is exhibited in the 'Skinner box'. All the learning theorists have been accused of converting human motivation to the interaction of stimulus-response reinforcement; patterns which are not motivators but which facilitate motivation and result from motivation. However, despite the criticism these principles have been used successfully under various non-laboratory situations to motivate animals and human beings.

THE HUMANISTIC MODEL OF MOTIVATION

The humanistic model of motivation is, in a way, a reaffirmation of a common sense view of motivation. It derives its views from the behaviour of artists, poets, novelists and philosophers. Towards the second and third decade of this century there emerged a group of psychologists who were dissatisfied with behaviourism on the one hand and psychoanalysis on the other. Leading among the humanistic psychologists were Rogers, Maslow, Goldstein and Allport. They argued that psychoanalysis and behaviourism, though apparently differing from each other, however share certain common limitations. Firstly, neither of them was based on an observation and analysis of the actions of normal human beings. While behaviourism was primarily guided by animal experiments, the psychoanalysts were inspired by abnormal individuals. It is obvious that theories based on such observations cannot adequately explain the behaviour of the normal.

Secondly, both these approaches were reductive in sense that they attempted to reduce all forms of motivation to one or two basic concepts like life instinct or biological drives. This reductionism has two implications- the first being that while there can be a variety in human behaviour there is no variety in motivation and the second being that psychological motives do not exist as such and are only derivatives from physiological or organic motives.

The humanistic model while not denying the importance of organic and physiological motives, nevertheless, makes a positive assertion about the independence and primacy of psychological motives in and by themselves. Among the humanistic theories Maslow's theory of motivation is the most popular due to its theoretical and practical value. Hence in this chapter only this theory is discussed.

MASLOW'S THEORY

Maslow complains that the earlier theories have restricted themselves to - explaining one side of human behaviour, which is basically constituted by the darker, evil and fragmented elements or isolated actions under restricted conditions. His own attempt is claimed to be an attempt to supply the other side of the picture, the brighter and better half. Thus, Maslow's was an attempt to portray a total picture of human behaviour as voluntary and purposeful activity.

Maslow's approach is unique. He explained human motives or needs by arranging them in a hierarchy. This arrangement was made in the order of potency and priority of unsatisfied human needs. The hierarchy has different levels arranged in an ascending order. However, an individual's stand in this hierarchy is determined by either deficiency-oriented or growth-oriented behaviour (D behaviour, G behaviour.) The person who is deficiency-oriented is one whose basic needs have not yet been satisfied and who is oriented towards achieving satisfaction and eliminating deficiency. The person who is growth-oriented is the person whose basic needs have been satisfied and who is motivated towards seif-actualisation. This aspect will become clear once the reader goes through the hierarchy of needs. The hierarchy is shown in Fig. 14.1.

At the first level are the physiological needs. They are the most basic aspects of human motivation. These needs pertain to conditions such as hunger, thirst, sleep, etc. which are essential for maintaining life. Once these needs are satisfied the second level needs emerge and gain importance. The second level needs constitute desire for security, protection and freedom from danger. On the whole these feelings pertain to the individual's desires to attain a stable and secure environment. When these needs are satisfied, the third level needs emerge; they are love and the feeling of belonging.

These needs motivate the individual to have friends, companions, a family and identification with different groups. As these needs are satisfied 'self-esteem needs' emerge. This involves the desire for respect, confidence and admiration from others as well as oneself. At the highest level is the desire to utilise one's personal capacities, to develop one's potentialities to the fullest and to engage in activities for which one is well suited. This level is called 'seif-actualisation'. One can see how D and G behaviours interact at various levels of the hierarchy. The concept of seif-actualisation is very similar to the concept of "becoming" postulated by another leading psychologist G.W. Allport.

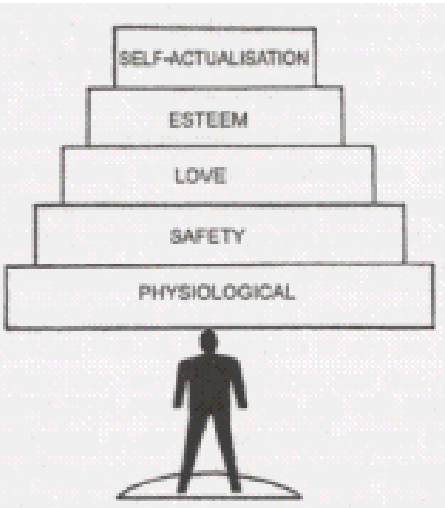


FIG. 14.1 *Hierarchy of needs*

In this hierarchy it is assumed fhat the lower level dominates man until that level is fairly satisfied; then the next one emerges and then the next one and so on. However, Maslow explains that every individual does not ascend this hierarchy step-by-step; exceptions do arise. An individual sometimes risks his life to save someone else or to save a valued object by defying his own safety needs. Sometimes individuals reject love, family, friends, another by committing suicide, thus defying the needs of love and the sense of belonging. Often people remain at a certain level, being content without moving up in the hierarchy.

The hierarchy, however, does not imply that lower order needs become dormant once they are satisfied and the higher order needs become active. In any individual at any time all the needs are active. The changes which occur actually refer to the potency or capacity of the different kinds of needs to motivate behaviour. Thus, basic needs like hunger and thirst cease to be powerful motivators of behaviour once they have been satisfied to a certain degree. This actually means, from a practical point of view, that every category of needs has a limited capacity to motivate behaviour. Beyond this point of limitation, it is necessary to involve a higher category of needs to motivate action.

CRITICISM OF THE HUMANISTIC MODEL

The humanistic theory has been criticised for being overoptimistic about mankind in general. The humanists display immense faith in the inherent goodness of man; they try to captivate people not by their theory or principles, but by propagating views which are against behaviourism and psychoanalysis. Behaviourism may be too cold and psychoanalysis too pessimistic, but humanism is too unrealistic. Maslow's theory has been accused of looking at only the healthy side of man and totally ignoring the unhealthy side and also too idealistic. Mankind is a combination of healthy and unhealthy behaviour. Rejecting the unhealthy part means rejecting more than half of the human world. The humanistic model

tried to rectify the errors committed by the earlier models, but in the process committed certain errors of its own.

In conclusion, it can be said that the humanistic model insisted that the human being is not a mere combination of different systems but a single entity consisting of many part functions. The humanistic theory got full credit and recognition in our modern world because it attempted to view man as a man and not as an animal or machine thus restoring man to himself, along with his totality, but beyond this one is not sure whether it has.

UNCONSCIOUS MOTIVATION

Sigmund Freud was the first to unfold the 'unconscious' and the 'poignant' aspect of human beings in a systematic manner. Among the variety of Freud's concepts it is 'instincts' and the 'unconscious'which assume groat importance when motivation has to be explained. Freud's view about instincts has been described earlier in this chapter. The unconscious, as a theoretical proposition, has helped us to understand why we sometimes do things without knowing why we do them. He described three levels of awareness; the first being the conscious level which includes all the thoughts and experiences of which the individual is immediately aware of at any particular time. Below this level is the preconscious or foreconscious. This level is a border-line area consisting of thoughts, feelings and experiences which are not available at the moment or immediately, but can be recalled with a little effort. The third level, the unconscious, includes ideas, thoughts and feelings which cannot be brought to awareness or the conscious level by ordinary means.These three processes can be inferred from the following illustration: if a college girl is asked the name of her fifth class mathematics teacher the student might come out with one of three types of reactions. She might straight-away give the name. This indicates the existence of consciousness. Alternatively, she might think for some time to recollect the name; this indicates the existence of preconsciousness. It is also possible

that she may be unable to recollect the name immediately, but has to resort to round-about means by thinking, writing in detail or narrating in detail everything which she can recollect about school, teachers, subjects, lessons, etc. In the course of her narration she might hit upon the name of that particular teacher. This indicates the existence of the unconscious.

According to Freud, the unconscious consists of unfulfilled desires, ideas, feelings, etc. It is like a great underworld with powerful unseen forces which influence the conscious thoughts and the actions of man. Much of human behaviour is motivated by unconscious wishes, not only normal behaviour such as interests, hobbies, friends we would like to meet, professions we would like to choose, etc., but also bizarre behaviour, such as developing dislikes towards things and people for no apparent reason and so on. Freud totally rejected the principles or theories which limit themselves to the analysis of observable and conscious behaviour because they cannot explain the underlying potent unconscious motives of human behaviour. According to him, unconscious processes which guide human behaviour can be known by special techniques devised by psychoanalysts. Some of the important techniques are free association, dream analysis, analysis of forgetting and slips of the tongue, etc. For further details about the unconscious and the techniques of its assessment, refer to the chapter on Personality.

CARL JUNG'S APPROACH

Jung, a distinguished psychologist, emphasized the importance of unconscious processes in human behaviour like Freud. However, his concept of the unconscious differs very much from that of Freud. Jung believed that the unconscious is much more complicated and is made up of two functional divisions, the personal unconscious which is similar to Freud's description of the unconscious; and the collective or racial unconscious which is much more influential and primordial. According to Jung, human

behaviour is guided by two potential forces - the unconscious and teleology. The unconscious includes everything about the human past, while teleology includes everything about the future, like one's aims, aspirations and intuitions. Thus, psychic life results from an interaction of the past with the future. The main agency which guides the past and the future is the ego which he calls the 'conscious mind'. The ego is made up of conscious perceptions, memories, thoughts, feelings, etc. Beyond this ego lies a bigger interacting system which influences human behaviour. This Jung calls the personality or the psyche.

The collective unconscious or transpersonal unconscious is one of Jung's most fascinating and significant concepts. It is the most powerful and influential system of the psyche and in pathological cases, it overshadows the ego and the personal unconscious. The collective unconscious is considered to be the storehouse of latent memory traces inherited from man's ancestral past, a past that includes not only the racial history of man as a separate species but also his prehuman or animal ancestry, as well. It is the heritage of man's evolutionary developments which got accumulated as a consequence of repetition over generations. Thus, all human beings have the same collective unconscious. This universality of the collective unconscious is attributed to similarity of the structure of the brain in all races of people. This similarity in turn is due to common evolution. Just as man is born with the capacity for seeing the world in three dimensions and develops this capacity through experience and training, so is he born with many predispositions for thinking, feeling and perceiving according to definite patterns and contents which become actualized through individual experiences. For example, man is predisposed to be afraid of darkness or snakes because, it may be assumed, primitive man might have encountered many dangers in the dark and was a victim of poisonous snakes.

These latent fears may never develop in modern man unless they are strengthened by specific experiences, but nonetheless the tendency is there and makes one more susceptible to such experiences. Some ideas are easily formed such as the idea of "Supreme Being or God" because the disposition has been firmly imprinted in the brain and needs very little reinforcement from individual experience to make it emerge into consciousness and influence one's behaviour. These latent or potential memories depend upon inherent structures and pathways that have been engraved on the brain as a result of the cumulative experiences of mankind. To deny the inheritance of these primordial memories, Jung asserts, is to deny the evolution and inheritance of the brain. He says, "The form of the world into which he is born is already inborn in him as a virtual image."

The unconscious, both personal and collective, can be of immense service to man. "The unconscious holds possibilities which are locked away from the conscious mind, for it has at its disposal all subliminal contents, all those things which have been forgotten or overlooked as well as the wisdom and experience of uncounted centuries which are laid down in its archetypal organs." On the other hand, if the wisdom of the unconscious is ignored by the ego, the unconscious may disrupt the conscious rational process by seizing hold of them and twisting them into distorted forms. Phobias, delusions and other irrationalities stem from neglected unconscious process.

The components of the unconscious are called by various names - archetypes, dominants, primordial images and imagoes. An archetype is a universal thought, or idea which contains a large element of emotional and motivational force. This force creates images or visions that correspond in normal wakeful life to some aspect of the conscious situation. For example, the archetype of the priest produces an image of a priest figure which is then identified with an actual priest. The two images often fit together

compatibly because the archetype itself is a product of racial experience with the world and these experiences are much the same as those that any individual living in any age and in any part of the world will have. That is to say the nature of a priest or what they do has remained more or less the same throughout the history of the race.

Archetypes originate due to constant repetition of an experience for generations. For instance, for countless generations, men have seen the sun and the moon rising and setting. The repetition of this impressive experience eventually became fixed in the collective unconscious as an archetype of the Sun God and the Moon God, the powerful light-giving heavenly bodies, and became objects of worship. Archetypes do not always exist in isolation, but penetrate into consciousness by way of certain associated experiences. The best sources of archetypal knowledge are myths, dreams, visions, rituals, neurotic and psychotic symptoms, etc. Some of the well-known archetypes identified by Jung are, Birth, Rebirth, Magic, Demon, God, Power, The Virgin, The Child, The Mother and The Wise Old Man. The archetypes so identified are treated as separate functional systems of the psyche. Some of the concepts used by Jung to explain the functioning of the psyche are given below.

The Persona: The persona is a mask which is adopted by the person in response to social demands, norms and conventions. It is the role assigned to him by the society and expected of him. The purpose of the mask is to make a definite impression upon others and often to conceal the real nature of the person. The persona is the public personality, those aspects which one displays to the world and to oneself. Often this is different from the private personality. This archetype develops out of experiences of the race. In this case, the experiences consist of social interactions involving the assumption of a social role which has served man through the ages. Hence, this persona or mask is developed and nurtured throughout one’s life.

THE ANIMA AND THE ANIMUS

It is a well-known and accepted fact that human beings are bisexual on a physiological level. The male secretes both male and female sex hormones, as does the female. On the psychological level too masculine and feminine characteristics are found in both sexes. Jung describes the feminine side of man's personality as anima, and the masculine side of the woman's personality as animus. These archetypes, although conditioned by the sex chromosomes and sex glands, are the products of the racial experiences of mai with woman and woman with man. By living with woman in society through the ages, man has become masculinised and by living with man in society woman has become feminised to an exaggerated degree. The anima in men and animus in women often seek expression in conscious behaviour in an attempt to restore the balance between feminine and masculine concepts.

THE SHADOW

The shadow archetype consists of the animal instincts which man has inherited and thus, indicates the animal side of man's nature. This could be inferred from the display of violence, aggression, injury to oneself and others in thought, feeling, words or action. It is rather unconventional to engage in an elaborate discussion on Jungian concepts.

In the above paragraphs the concept of motivation and other important terms and concepts in Jung's theory have been briefly touched upon. Here an attempt is being made to present more explicitly the implications of these concepts for motivation. The reader might have noticed that in explaining all these concepts, Jung emphasises their functional and motivational nature. The archetypes are really systems of libido or psychological energy and can, therefore, initiate and regulate behaviour. As already pointed out, neurotic symptoms, dreams and creations of art are all basically expressions of archetypal motivation. Jung makes a

clear distinction between organic motivation, on the one hand, and independent psychological motivation, on the other. The archetypes are essentially psychological motives very crucial from the point of view of the total and harmonious development and growth of human nature. To a certain extent their individual motivational meanings can be subsumed under the general motive of psychic growth and harmony-which Jung calls the motive for integration or individuation. The term, individuation, means a total, integrated and complete development of the individual. We may here see that to a great extent, Jung anticipated the humanistic model of motivation which stresses the process of seif-actualisation. But the Jungian concept went far beyond into a metapsychology while the humanistic model of seif-actualisation is still constrained by the concept of adjustment and is existential in its approach.

Jung's approach to motivation was not, however, entirely based on archetypal motivation. While archetypal motivations constitute the inherent, natural and basic motivational characteristics of the human psyche, there is also another source of motivation which manifests itself in non-adjustive behaviour like dreams, neurotic symptoms, etc. These sources are named by Jung as 'complexes'. Complexes are formed out of unfulfilled wishes in day-to-day life. These complexes also motivate behaviour. The operation of complexes in his theory is very similar to the operation of the unconscious motives formulated by Freud.

CRITICISM OF THE CONCEPT OF UNCONSCIOUS MOTIVATION

The emphasis on the role of unconscious motivation on human behaviour has been criticised as being most unscientific. By studying a few, cases and speculating from the armchair these theorists claim to have discovered universal principles. They have been accused of exaggerating the role of the unconscious process and reducing the importance of conscious human motives which

contribute to the growth and satisfaction of the self, and totally neglecting factors like learning, thinking, reasoning, etc. which shape human behaviour to a great extent. Freud's theory was criticised for making use of unscientific data such as free association and dreams as indicators of human behaviour. Information obtained from dreams and free association is often unreliable and inauthentic. This applies especially to dreams because a person records his dreams long after he finishes dreaming and moreover, by the time he wakes up he is entirely in a different state of mind.

Jung has been accused of demolishing Freud's concept of consciousness and erecting the ego in its place. His concept of the collective unconscious is considered to be absurd and lacking in scientific proof. Critics accuse that his theory is less clear and more mystical than the instinct theories. But it cannot be denied that Jung went far beyond the conventional learning and motivation theories. However, the last word on this has not been said.

COGNITIVE FACTORS IN MOTIVATION

CONTENT VS PROCESS APPROACHES

In the above theories of motivation, the reader must have noticed, that every motive or need has a specific end or meaning. Thus the instinct theories postulated specific instincts like instinct of sex, etc. Similarly, the theory of Maslow also postulated specific motives with different end states in mind. Such theories which postulate specific motives with definite end states are generally described as Content Theories. Hence it may be seen that among themselves these theories vary in the degree of specificity of content. Thus the classical instinct theories were more specifically content-oriented, compared to the needs postulated by Maslow.

On the other hand, there are other theories which look at 'Motivation' as a process set in motion by some disturbance in the equilibrium of the organism or its balanced relationship with

the environment. Their causes may be internal or external. An organism so disturbed, moves in a direction so that it can reach another state of equilibrium. Such theories do not postulate specific 'motivational patterns' unlike the content theories. In a way, the Hullian concept of drive can be regarded as a process approach. Hull, as the reader may remember, postulated that any 'intra-organic' deprivation results in generalised drive state propelling the organism to take recourse to actions which will lead to drive reduction, and consequently, re-establishment of a state of equilibrium. But the real process theories had their origins in Lewin's field theory. According to Lewin, the individual's psychological field is divided into two broad regions, an inner person region and an outer environment.

The 'inner person' region gets gradually differentiated into 'tension' systems (sources of motivation) and the outer environment is divided into 'regions'. Whenever a particular tensions system is aroused or activated, the individual tries to move from one region to another region. Let us take the example of a student sitting and studying. He is now in the region of studying. Suddenly he remembers that he had promised his mother to meet her at her office. This activates another tension system, and disturbs the equilibrium. This can be restored only if he moves into the region of going to his mother's office and meeting her. This process of shifting from one region to another is described by Lewin as 'locomotion'. Lewin t calls the activation of a particular tension system as vector. This vector has a direction and intensity.

Another process approach to motivation is based on the view of Vroom and is known as the expectancy approach.The expectancy approach attempts to explain motivation on the basis of certain expectancies or expectations that people develop. The first expectation or expectancy refers to the link between effort and how far a person believes that his efforts would result in

successful performance. For example, if a student comes to believe that however much he studies, he cannot do well in the examination; this will result in low motivation or expectancy. The second expectation links performance and outcome; how far a person believes that if he performs well, the desirable outcome is reached. In the above example, if a student believes that if he performs well at the examination, then his grades will be high, this results in a high degree of motivation or expectation. It can be seen that the second type of expectation (performance-outcome expectation) depends on the first type of expectation, namely efficient performance expectation. A third factor is known as valence. For any effort there can be a number of outcomes. For example, a student who has a strong E-P expectation, and a P-O expectation, can experience more than an outcome. He may secure the highest marks with a commendation, he may just secure the highest mark or he may find that another student has also been awarded the same number of marks. Now each one of these outcomes has different degrees of attractiveness or valence for the student. This quality of valence or attractiveness of the outcome is another factor influencing motivation. For example, one student may not be interested in a 'commendation' and his degree of motivation will be lower than that of the one who values a commendation. The term valence here is used to indicate, how attractive the outcome is to the person rather than the actual value. Thus in an organisation, an employee may value the nature of the work, rather than mere monetary incentive.

The table below shows how these factors can combine and influence the process of motivation.

COMBINATION OF COMPONENTS OF EXPECTANCY THEORY AND THEIR RELATION TO THE LEVEL OF MOTIVATION

E-P expectation	*P-O expectation*	*Valence*	*Motivation*
High	High	High	High
High	High	Low	Moderate
High	Low	High	Moderate
High	Low	Low	Low
Low	High	High	Low
Low	High	Low	Low
Low	Low	High	Low
Low	Low	Low	Very Low

It may be seen here, that the first expectation depends on how far the person has been able to perform successfully in the period. This is where realistic goal and task setting become important. The individuals' confidence level should be pushed up. The reward system should also take into account the valences people have. Thus a flexible reward system is likely to be more effective. Above all p should be assured that good performance will lead to high valence outcomes. The expectancy theory offers very interesting prospects, but is still to be established. Basically its emphasis is on expectation or 'cognitions' in the process of motivation. It may also be seen that this theory does not postulate any content based scheme of needs or motives.

LEVEL OF ASPIRATION

Individuals differ in choosing their goals in undertaking various activities. They differ in how well they expect to perform in a given task, or what they expect to achieve in life, i.e., they differ in their level of aspiration.

An individual's desire for distinction in a field of performance is known as his/her ambition. The level of distinction, or 'how much distinction' the individual wishes to attain from a particular

task determines his goals. The selection of particular goals for which the individual will strive in a given task is called, goal setting. This is influenced by ambition and level of aspiration.

What is Level of Aspiration? Level of aspiration is the level of difficulty of goals which the individual sets for himself. The term 'Level of Aspiration' was coined by Hoppe in 1930. He directly observed behaviour .following success and failure; i.e, the effect of success and failure on goal-setting behaviour. The level of aspiration for a particular activity is determined by past success or failure in the particular activity or a similar activity. Depending upon whether our aspirations are difficult or easy to achieve in relation to our abilities and environmental opportunities, we are said to have a high or low level of aspiration.

The level of aspiration is the possible goal (score) an individual sets for himself in his performance. Actual performance could be better than expected, as expected, or less than expected. It has been commonly observed in various experiments that successful performance leads to an increase in level of aspiration and unsuccessful performance (failure) leads to a reduced level of aspiration.

The individual's level of aspiration in a specific kind of activity can be assessed directly and quite accurately. For example, a beginner in high jump will not expect to break the world record of 1.9 meters. So, he will not set such a difficult goal at the first trial. At the same time he will not be happy or thrilled at setting 1 meter as his goal, since it is not at all a difficult one to attain. Gradually raising the bar and asking the youth if a given height suits him, one can determine his level of aspiration. But as he makes a number of attempts at various heights, he alters his subsequent goals based on the success or failure on each trial. In experiments with different tasks, Hoppe observed an increase in aspiration level after repeated success and a decrease after repeated

failure, which he described as typical shifts in aspiration level. After success, children showed increase not only in the level of aspiration but in the speed of selecting the next goal and their eagerness to attempt more difficult tasks. After failure, the average selection time either remains approximately the same, or even increases, i.e., children took more time to select the next goal. The drop in self-estimation following a failure is expressed not only in the decrease in aspiration level but in considerable fluctuation or a slow, lingering process of selection of the next goal.

In addition to success and failure, level of aspiration is also influenced by the intensity of achievement motivation of the individual, the setting of the task, i.e., the presence, prestige and behaviour of onlookers, the individuals attitude, motivation, interest, sentiment, etc. towards the task performed, also other feelings like frustration and insecurity, his ego involvement, self-esteem, etc. In order to measure the individual's level of aspiration, a number of laboratory experiments have been designed, of which Rotter's and Kurt Lewin's techniques are the most prominent.

ROTTER'S LEVEL OF ASPIRATION BOARD

Rotter used a wooden board with a groove, an iron ball that could freely roll in the groove and a wooden rod to set the ball rolling. It is called the Level of Aspiration Board. The subject (whose level of aspiration is being measured) stands at one end of the board. The other side of the board is marked from 0 to 20. The subject first calls out a number (between 0 & 20) which he wishes to be his goal. He is then given 20 hits to practice hitting the ball with the correct force so that it reaches and stops at that goal.

Then he is given 20 trials. At each trial, he has to select a goal and announce the number. The experimenter notes down the number. He is given 5 hits to reach the goal. Each time, the

experimenter notes down the point where the ball stops. After 5 hits the subject selects his next goal and hits 5 times, and so on, for 20 trials. For each of the 20 trials, the difference between goal selected and actual performance in the previous task is calculated. If the difference is (+) positive, i.e., the goal selected is higher than achievement on the previous trial, the level of aspiration of the individual for that activity is said to be positive.

This, however, is a very simplified version of the level of aspiration experiment conducted by Rotter. Rotter used the scores to calculate the subjects' expectancy of success, reinforcement value, etc. and used the technique to study the role of personality variables (like level of aspiration) in abnormal behaviour.

LEWIN'S LEVEL OF ASPIRATION EXPERIMENT

Kurt Lewin developed a technique for studying the level of aspiration, of an individual, to find out the process involved in goal-setting behaviour and the factors influencing it. In this procedure, the subject is given a number of trials on a task (like dart-throwing). Before the first trial, he is asked to express how well he expects to perform on the first trial. After the trial, he is given the result (success or failure) and asked to state how well he expects to perform on the next trial. Using this technique it has been found that (i) success increases and failure lowers the level of aspiration (ii) knowledge of how others have performed on the task also affects goal-setting (iii) individual differences sometimes related to past history of success or failure in similar tasks or other activities (like school) may lead to differences in their level of aspiration and (iv) as the predictions of success decreased, effort made on these trials tended to increase.

Lewin, based on the experimental studies, suggested that the subject appears to strike a balance between the likelihood of success and the likelihood of failure in achieving a given performance level. Lewin's theory emphasises that values of

success and failure at any performance level are weighed by a subjective probability factor. In a given task, the highest performance level has high positive value of success, but, the probability of success is the lowest (eg. bull's eye in a dart game) whereas the lowest goal has a high probability of success and low positive value of success.

When behaviour in the level of aspiration situations in various experiments was observed from a systematic personality theory viewpoint, the behaviour was attributed to a resultant of three kinds of factors or influences :

(1) The seeking of success,
(2) The avoiding of failure, and
(3) The judgement of probability of success. I

That is, an individual making an estimate of his future performance is influenced by his desire to be successful at as high a level as possible, his desire to avoid failure and his expectancy of making the given score.

Achievement motivation decisively influences the aspiration level preferred by the individual. The individual's momentary achievement on the previous trial, his longstanding achievement confidence, his momentary achievement impulse, the seriousness of the situation, how important performance of the task is for the individual, the costs of failing on the task, etc. all determine the aspiration level of the individual in the given situation.

Those confident of success prefer an aspiration level somewhat above the actual achievement, whereas those concerned about the possibility of failure prefer an aspiration far above or far below their actual capacity.

Success or failure in significant activities have a great influence on our self- esteem. If we consider a goal as very simple, successful attainment of the goal does not make any significant

contribution to our self-esteem. Failure in attaining a very difficult goal does not make one feel very inferior. In short, attaining a very easy goal does not produce any satisfaction, and a very difficult goal reduces the chances of success. Therefore, individuals have the tendency to choose goals that are moderately difficult. Their actual performance could be (1) better than expected, (2) as expected, or (3) less than expected. In the first two conditions, the individual experiences success and sets his next goal slightly higher or much higher than the previous one, depending on the degree of success. But, in the third condition, he experiences failure, and therefore, a setback in his sense of competence and self esteem. He may then try to attain the same goal with more effort or with a different strategy, or he may try to set a lower goal which is more attainable. If repeated failures occur, it leads to 'withdrawal of motivation' and the individual does not desire to succeed in the task.

The process of adjusting one's goals downward in order to avoid failure is doubly motivated; (1) it may help avoid damage to one's sense of competence and (2) it avoids futile expenditure of energy. To avoid the anxiety which might result from both of these sources, an individual who has failed a number of times may 'pull in', stop aspiring at all, or give up setting goals. In its extreme forms, the avoidance of goal-striving activity can lead to apathy and depression, even to the point of a person giving up his motivation to live. At a less extreme level, whole groups of people, such as the poverty-stricken, give up aspiring towards better goals. On the other hand, the process of raising goals after successes can lead from an upward setting of aspirations, to the seeking of new goals. The individual's successes lead him to strive for even more successes; a group of people on the move which has just overcome some difficulties, now attempts to achieve even higher goals. Downtrodden, oppressed people, in economically underdeveloped parts of the world who have just started to make gains may aspire for even greater and more rapid advances. These

rising expectations are caused partially by the sense of competence resulting from previous successes. Here again it is possible that expectations and goals may be unrealistic or euphoic and may not be achieved.

We see that the mechanism of level of aspiration and one's reactions to success and failure play a significant role in the individual's life as well as the performance of the whole community. It is essential that in setting up goals or levels of aspiration one should be realistic, neither setting up very high levels on the basis of some success nor very low goals, as an immediate reaction to some failures; while the former may lead to repeated failures and consequent frustration and depression, the latter may lead to under-achievement and also lower levels of motivation.

CHARACTERISTICS OF MOTIVES

Notwithstanding the differences among the various theories, psychologists in recent years have been able to arrive at a consensus regarding some of the general characteristics of motives. Motives like any other psychological processes have certain specific characteristics which make them different from the other processes. Some of the characteristics identified are as given below:

1. Motives apart from functioning as behaviour arousers, also direct the behaviour and make the organism seek specific goals.
2. Every action or behaviour of a living organism is brought about by some type of motivation.
3. Human motives differ in number, type and intensity.
4. Human beings could be motivated either by one or more motives or needs at a given time.
5. Motives are influenced to a great extent by biological, psychological and social factors.

6. Motives change according to the internal and external environments of the organism.
7. Specific types of motives generally result in specific patterns of behaviour. This, however, need not always be true. It is quite possible that the same motive may induce different patterns of behaviour in different people or in the same person on different occasions.
8. The same pattern of behaviour may result from different underlying motives.
9. At the human level, it is rare that motives operate individually and in isolation. Human behaviour is often a result of the simultaneous operation of several motives.
10. In view of the above, motives often interact among themselves in different forms. Some of these forms of interactions are described separately in this chapter.

In the course of their growth and development people tend to develop a priority order. So far, the authors have been trying to answer the question posed in the first paragraph of this chapter : what are motivators? For centuries, in the process of answering this question, philosophers and psychologists ended up suggesting alternatives which were only, at best, partial answers. This, perhaps, is the natural consequence of the exploration of any psychological process and more so with motivation. If we really discover the right answer to the question as to what motivators are, we wouldn't be human beings any more. We would advance to such a stage in the evolutionary ladder that we would look back at human beings the way we now look at our ancestors-chimpanzees.

Now, we shall proceed to answer the second question- how will this knowledge of motivators help us? In order to answer this question, scientists working in this area tried to convert theoretical concepts into techniques and tools to measure motivation. Theoretical concepts of any process, either psychological or

physical-unless extended to identify and measure the respective processes, its effects and the degree of its presence - will have little or no value to human beings. For example, 'intelligence' in psychology or matter in physics may sound fascinating as theoretical concepts but if they cannot be measured, they are like useless ornaments. So in order to answer the second question, the measurement of motivation was seriously undertaken.

MEASUREMENT OF MOTIVES

Early attempts at the quantitative study and measurement of motivation were related to animal behaviour as in the case of learning, perception and other psychological processes. Most of these early attempts took the form of comparing the behaviour of animals like cats, rats, etc. under different degrees and kinds of deprivation. Thus, animals were deprived of food or water and the differences in behaviour arising out of different kinds and lengths of deprivation were analysed.

These psychologists assumed that the level of activity under specified conditions of deprivation would serve as valid indication of the degree of drive or motive. Three well-known gadgets employed in such experiments were-the Lashley Jumping Apparatus, the Columbia Obstruction Box and the Activity Wheel. The experimenters using these apparatus arrived at a number of findings often contradicting each other, regarding different kinds and degrees of deprivation and the resulting activity. Obviously these attempts were rather crude and inadequate as per today's standards. Nevertheless, they opened up the possibilities of measuring motivation, and experience investigation into motivation process.

It may be seen that these early attempts at the quantification of motivation were primarily guided by the following assumptions. Firstly, the degree of motivation in the organism could be regulated by external supply or deprivation of food, water, etc. Secondly,

the level of motivation was proportionate to the level of activity exhibited by the organism. Finally, the food or water was the only motivating factor operating at the given time. These assumptions may not be justified even at the level of lower animals and are scarcely imaginable at the human level. Yet another point was that these early experimenters were interested in comparing different kinds of motivation rather than in comparing different organisms. Their preoccupation was to study the difference between different kinds of motivated behaviour rather than individual differences. It should be obvious to the reader that at the human level, this is precisely the problem. When psychologists began to measure motivation at the human level the most obvious questions to be asked were, (a) who is more motivated A or B? (b) under what kind of motivation is A likely to work or behave more effectively than at present? and (c) how can A,B and C be motivated to bring out the best in them? Obviously and understandably, those dealing with the motivation of animals were not bothered by such questions. These were, however, important problems which confronted psychologists in their attempt to measure motivation at the human level.

MEASUREMENT OF HUMAN MOTIVES

The problem of measuring human motives, however, proved too complex for these early and naive attempts. Apart from the practical difficulties involved in putting people into an Activity Wheel, the very idea of measuring human motivation through activity is ridiculous because, at the human level, there can be motivated activity or even inactivity as well as unmotivated activity. The fact that in human beings motivation shows a high degree of complexity and even complicity renders the problem more difficult. The Freudian concept of unconscious motivation adds the possibility of different forms of activity springing from the same iirntive and also the converse. This has necessitated the development of a variety of tools and techniques. None of these, however, can be used exclusively-each has to be used in

combination with others. Psychologists concerned with this problem have developed a variety of tools serving different purposes. Two main approaches have been identified: the direct measurement of motives and the indirect measurement of motives.

DIRECT MEASUREMENT OF MOTIVES

This approach believes in measuring motives directly through objective observation, conscious self-reports, administering questionnaires and inventories to assess specific motives as required by the experimenter. Many gadgets have been devised to measure drives such as hunger, thirst, etc. These gadgets give a precise quantitative measure of the level of deprivation, physiological changes accompanying the drive and some behavioural changes as well. In this approach, the tools are structured and the responses are classified into predetermined categories.

INDIRECT MEASUREMENT OF MOTIVATION

It has been assumed by some psychologists that motivation cannot be measured directly, but can only be inferred through certain indirect means. Hence, they use projective techniques, where the stimuli are deliberately made somewhat ambiguous in nature and one is generally free to give the responses as one wishes. Popular projective techniques used to assess motives are ink-blots, pictures, incomplete sentences and ambiguous figures. It is argued that chances of faking are less in this case, because the test respondents do not know what kinds of demands are being made of them. They will be more likely, in this procedure, to project their own needs and motives into their responses (at least according to the rationale of projective techniques).

One of the most popular projective techniques used in motivational research is the Thematic Apperception Test (TAT), originally introduced by Morgan and Murray in 1935. Since then, it has been used by others in both its original and revised forms as

a way of measuring differences between people in their needs and motives and also the strength of different motives in the same person. The TAT consists of a series of pictures about which the person is asked to write stories. These stories are then analysed and coded as motives, needs, wishes, desires and so on which are assumed to have been projected by the respondent into the characters in the pictures and which then manifest themselves as one writes about these characters in the stories one develops. The T.A.T, however, is not just a tool for measuring motivation. It is a test of personality.

The plethora of studies on motivation, despite their flaws, has opened avenues for human beings to understand themselves, their close and remote associates, and even the behaviour of people of other countries and continents. The fact is, if one knows and understands motives, a large number of behavioural problems created by oneself and others are solved. One of the greatest favours done by psychology to humanity is its attempt to measure and explain human motives. However it should be mentioned that the methods developed for measuring motives are totally far from satisfactory.

SOME SPECIFIC FORMS OF MOTIVATION

Our preoccupation in this chapter so far has been with general issues like theories of motivation, the measurement of motives, the nature of motives, etc. In recent years, however, there has been a trend away from preoccupation with such general questions. Some psychologists instead of being concerned with such broad questions have devoted themselves to intense study and analysis of specific motives. The purpose behind such studies is to understand the role of specific motives in behaviour and also to explore the possibility of changing and manipulating them to bring about positive changes in behaviour. Some of the motives so identified and studied are the motives for achievement, affiliation and power. Yet another interesting motivational complex studied

is aggression. In all such investigations, however, one has to make a distinction between the underlying motivational source, and overt behaviour. In fact, this problem has been very crucial to such studies. It is here that one may make a distinction between primary and secondary motives. Detailed discussion on this distinction is found in the chapter on Learning. Aggression, for example, has been considered as a primary motive by Freud while many others do not agree with this view. We may briefly examine some of the attempts made to study individual motives by various investigators.

ACHIEVEMENT MOTIVATION

David McClelland and John Atkinson pointed out that the effective functioning of society, schools, organisations and individuals depends, to a great extent, on what one wants to achieve. It is a fact, all things being equal, some individuals perform very well in a given task or assignment and some do not care at all about the performance or even the task. This is because the individual's behaviour is either directed towards success or some standard of excellence which is said to be the outcome of 'achievement motivation' or a need to achieve excellence in performance.

McClelland claims that the level of achievement motivation differs from one individual to another and, as a consequence, the level of performance differs on a given task. He further argues that the success of societies, organisations and individuals depends on high achievement motivation levels. Perhaps this is true. The material advancement of most western societies may be ascribed to a high level of achievement motivation. However, to achieve one's goals one needs to set aspirations at a higher level and try to overcome any obstacles to succeed. In a series of studies undertaken across the world by Mclelland and his associates, it has been shown that a higher degree of achievement motivation as measured by psychological tests is associated with superior performance in a variety Of situations. People with a higher degree

of need achievement or 'n-Ach' have been found to show greater degrees of initiative, risk taking, and originality - all these resulting in qualitatively superior performances. These findings have certain implications for the economic and industrial development of different nations. McClelland has further proceeded to demonstrate that the level of the achievement need in individuals can be raised through certain psychological procedures. Research studies have shown that the quality of performance of individuals in various tasks can be definitely improved by raising the level of their achievements motive. Such procedures are referred to as achievement motivation training. It has been found that the level of achievement motivation is higher in industrialised western countries compared to developing countries.

AFFILIATION

We find, that on the one hand, human beings try to hurt and destroy others physically, psychologically and on the oth we find them trying desperately seeking others, wanting to get close and be close to other human beings and become members of groups. This behaviour of seeking other human beings and wanting to be close to them both physically and psychologically is called affiliation. The affiliation motive is aroused when individuals feel threatened or helpless and also when they are happy. For example, if you carefully observe groups of people flocked in front of a notice board where the results of some competitive examination are put up (most of them being strangers to each other), you invariably find all the failures forming a group, sharing grievances against the examination system, examinations, examiners and so on, while the individuals who passed the examination form another group sharing happiness, future plans, etc.

It has also been suggested that fear and anxiety are closely linked to the affiliation motive. When rats, monkeys or human beings are placed in anxiety producing situations the presence of a member of the same species who is not anxious will reduce the

fear of an anxious one. If you are sitting in a ferry which is rocking violently due to bad weather and are becoming nervous, you may go over and sit next to a person who looks unalarmed, composed and start up a conversation, because this erratic weather and rocking does not bother him. Schachter conducted a very interesting experiment on college students. He divided the subjects into two groups- those who were high and those who were low on anxiety. Students of the 'high anxious' group were told that the experiment in which they had to participate involved receiving severe-electric shocks, while students of the 'low anxious' group were told that the shocks would be mild - like a tickle. However, all these students were given a choice of waiting alone or with others. More than half of the students belonging to the high anxiety group had chosen to stay with others, and less than one third of the other group preferred to wait with others. This shows that anxiety and threat are closely associated with affiliation. However, where the degree of anxiety or threat is very high such affihiative behaviour is often absent.

It has also been found that early learning experiences influence this motive. Sarnoff and Zimbardo pointed out that first-born or only children have stronger affiliation motives than those born later, perhaps because they are used to receiving more parental attention during the early years. Children who are brought up to be dependent or raised with close family ties show a stronger affiliation motive than those coming from more loosely-knit families that encourage early independence. It has also been suggested that affihiative needs are stronger in some cultures than in others. The Indian society has been characterised as being strongly affihiative in nature compared to many of the western societies.

POWER

Mankind has always struggled for power. Cities have been destroyed, property looted and wars waged by people in a reckless

manner to increase their power. Traditionally it was believed that power was desired -by people as an instrument to satisfy other motives like greed, aggression, affiliation, etc. In recent years, however, there has been emerging a different view which tends to emphasize the power motive as independent in itself and not derivable from other motives. Such a view has been expressed by David McClelland. As an independent motive the need for power expresses itself in behaviour which tends to control and influence the course of events including the behaviour of others. It has been reported that to a certain extent the degree of power motivation is related to executive and managerial success. Behaviour resulting from the power motive can take several forms like giving, taking away, giving up, etc. It is perhaps not out of place to point out that Indian philosophy placed emphasis on the power to give up or sacrifice. The rishis of Vedic India derived their power and strength because they gave up most material things. In recent years considerable amount of research is being carried out on the nature and expression of the power motive or the need for power and especially on its relation with successful performance and effective behaviour.

CURIOSITY

All of us must have seen our pet dog at home, looking puzzled, when a strange person visits us. He goes round and round the person, sniffmg around, waiting to know more about the visitor. Here, we find that the dog is not angry, or jealous or afraid. He feels slightly uneasy. There is no question of the reduction of any drive. The dog goes on exploring. At the human level, this type of exploration, has been at the root of all discoveries and innovations, and, the human being has been continuing to explore his environment. Here this behaviour does not lead to the satisfaction of any body needs,, or activity pleasure. Such behaviour, where searching activity or enquiring activity is seen without any other evident vicarious satisfaction, has been attributed by psychologists to exploratory needs or curiosity.

Psychologists are of the view that there are some basic needs, to explore and manipulate, objects in the environment. Thus when young children are given a new toy, they shake it, rotate it or even break it to see what is there inside. In his classical studies, Harlow, observed that, if some mechanical devices are placed before monkeys, they begin to break them apart, and with practice improve these skills.

Thus manipulatory behaviour is very commonly seen even at the level of animals. But one can see two types of "manipulatory behaviour." The first type of "manipulatory behaviour" is an end in itself and comes to an end soon. At a higher level such manipulatory behaviour, leads to further enquiring or investigative behaviour. Piaget, in his experiments on human infants, noticed the following sequence. Infants within the very first few months, learn to pick a string and activise a rattie hung above them. By the time they are six to seven months old, they remove a cloth from their face in anticipation of the "Peekaboo" game. By eight to ten months they look for objects in a corner or under a shelf or even under a covered basket and by the 11th or 12th month, they begin to experiment with dolls and toys putting them in different positions etc.

One important set of needs underlying such manipulative and exploratory behaviour appears to be sensory needs. There appears to be a basic 'sensory need' for sensory satisfaction, if any by itself. Experiments on sensory deprivation with col!ege students lend support to this view. College students who are kept under conditions of sensory deprivation (of light, sound etc) in separate cubicles, continuously, with only brief time-outs for lunch etc., refused to participate in such studies after some time, spurned offers of financial compensation and were terribly upset. A few of them even started experiencing visual hallucinations. Their normal functioning was disturbed. They were confused, irritated, and could not solve even elementary problems. Such a condition has

come to be known as 'sensory deprivation'. Many similar studies employing different procedures have shown that under continuous sensory deprivation, people tend to become bored, irritated, and emotionally disturbed. Individuals have been shown to differ in the extent to which they need and seek sensory stimulation or satisfaction or curiosity motive. Zuckerman has developed a tool called Sensation Seeking Scale (SSS). The scale tries to measure persons desire to engage in different kinds of activities providing sensory satisf action like adventurous activity, socially stimulating activities etc. Some sample items from the scale are given below:

1. a) I have no patience with boring or dull persons.
   b) I find something interesting in almost every person I talk to.
2. a) A good painting should shock or jolt the senses.
   b) A good painting should provide a feeling of peace and serenity.
3. a) People who ride motor cycle must have some unconscious need to hurt themselves.
   b) I would like to drive or ride a motor cycle.

Studies with this scale and many other studies have pointed to:

a) The existence of large individual differences in the extent to which individuals seek sensation.
b) Such sensation seeking behaviour is not situation specific but extends across different situations almost like a general trait or predisposition.
c) Scores on sensation seeking has been shown to be associated with a number of behavioural patterns like, risky sports occupation, behavioural features in situations which are generally considered fear arousing, fast drinking, gambling, indulging in adventurous activities, etc.

In general it has also been found that marriages where both the partners are high in sensation seeking or low in sensation seeking are more harmonious and also indicate better adjustment.

No doubt these studies have helped us to understand 'curiosity' or sensation seeking behaviour. But one also wonders whether the 'curiosity' of an artist or a scientist or a philosopher or an explorer, can be reduced to mere 'sensation seeking'. Such an approach seems to be rather immature and a result of the 'reductionistic' approach of western psychology. If curiosity is mere sensation seeking, then one wonders whether the great discoveries in science, new works of art, great explorations of explorers or even th growth of a discipline like psychology, would have been possible. Reducing curiosity to sensation seeking, thus appears to have resulted in a confusion of our understanding of curiosity. Curiosity may involve 'sensation seeking' or more aptly "sensation enjoying". But there is some thing more; knowledge seeking, meaning seeking and happiness seeking. It is a pity that in dealing with such a typically human form of behaviour, western psychologists have not gone beyond an animal frame of explanation. Curiosity may involve sensation seeking but as a means and not as an end. Similarly 'curiosity' need not only relate to externally induced sensory expectations. Spiritual leaders, philosophers and others have exhibited curiosity even with regard to internal experiences and sensations. Experiences of Ramakrishna Paramahamsa, Kirkegard, Sufi saints and many others are a result of wholesome purposeful efforts spurred on by curiosity. The ancient Indian logic of 'Not this' (Nethi) is an eloquent evidence to show that curiosity or exploration cannot be reduced to low order mundane "sensation seeking". A philosopher cannot be equated with a gambler or a dare devil traffic menace.

INTER-RELATIONS AMONG MOTIVES

Our discussion so far has centred around individual motives as independent units, but at the human level it is found that behaviour is rarely motivated by a single motive. Motives are found to operate in combinations and patterns. This is possible because behind all these organic and psycho-social motives are certain subtle underlying mechanisms which provide interlinks to the

whole network of the motivational system. These mechanisms are said to facilitate the efficient and smooth functioning of motives. Some of the mechanisms identified are parallelisation, fusion, ordination and conflict.

PARALLELISATION

We often come across one or more motives operating at the same time and at the same degree along with the other psychological processes, yet independent of one another. Scientists in the past claimed that if a man is thirsty at a given moment, he can only experience thirst and his whole behaviour will be driven to satisfy thirst, and until this is satisfied he will not aim for the satisfaction of any other drives. Similarly, a man who is starving for food will divert all his behaviour to reduce this condition without allowing any other motive to operate. However, this neither fits into a conimon-sensical nor scientific notion, because, if this was the case, to what can we attribute the large number of instances of food starvation due to poverty and over-population in the third world? It becomes obvious from this that the operation of more than one motive independently and yet with equal intensity is possible at any time. Hence the mechanism may be referred to as parallelisation. However, such a condition results in overall ineffectiveness. It is now realised that human activity can be initiated by more than one motive being active at the same time.

FUSION

Motives and their expressions change as the individual grows. They change due to the cumulation of a variety of motives, which in turn get fused. In the process the contents and structure of the original motives can rarely be discerned in their independent form, at the level of behaviour. This transformation of motives occurring due to fusion can be clearly understood from the following example: different motives like love for one's motherland, affiliation to one's countrymen, refusal to function under foreign dominance, etc. could get fused into a sense of patriotism or what

we may call patriotic sentiments. Thus, a group of motives fuse together and get transformed to sentiments and at times these sentiments can act as very powerful motivators.

ORDINATION

This mechanism consists of the interplay of functions like superordination and subordination. At a given point in time, depending on the gravity of the situation, some motives gain the utmost importance and dominance by pushing other motives to less dominant positions. These motives which gain dominance demand immediate execution and achievement of the goal. This mechanism operates to a high degree at the human level. We often come across instances of human beings giving up material possessions, loved ones, even their own lives, in preference to facing defeat or disgrace. For instance, suicide and self-immolation committed by some of the Indian princesses like Rani Padmini of Chittoor, or harakiri by Japanese soldiers who kill themselves instead of facing defeat and disgrace, may be cited as examples.

CONFLICT

The simultaneous occurrence of two or more mutually antagonistic impulses or motives usually generating tension is called a conflicting situation. We experience conflicts so often that we are thrown into a state of internal debate, thus creating a tussle between two or more motives. For instance, a working woman who is about to leave for her work realizes that her child is suffering from high fever. She experiences a conflict in deciding, whether to go or not. How she resolves this depends on various factors and conditions existing at that particular time.

EXTRINSIC & INTRINSIC MOTIVATION

In order to understand the applications and implications of motivational literature the motives are classified into two groups, extrinsic motives, and intrinsic motives. The machine and animal models have contributed to our understanding of extrinsic motives,

while, the humanistic, and unconscious models have contributed to our understanding of intrinsic motives to a great extent. Extrinsic motives can be traced easily through rewards, reinforcement and punishment. All these are similar to external forces which act upon the organism and propel and direct behaviour towards a desired goal.

Extrinsic motivation programmes have been extensively applied in educational, industrial and clinical settings - applications of these principles and their tremendous impact has been discussed in the chapter on learning. The findings presented in the chapter clearly show how behaviour can be aroused, directed or changed in order to reach a particular goal, in terms of learning a skill, a response and so on. Reinforcement programmes, especially token economy programmes, were introduced in schools, industries and psychiatric clinics to see whether they could motivate behaviour towards a determined goal. It was made clear to the individuals belonging to these groups that certain behaviour would be reinforced with extrinsic rewards in terms of grades and praises from teachers to the students, incentives like extra money and leisure time for industrial workers, cigarettes, chances to view television, play football, etc., for patients. The results were very impressive; they displayed increase in performance, efficiency, orderly behaviour and so on. This shows that social behaviour could be greatly improved. This further showed that certain types of behaviour which are necessary at a particular time could be motivated or aroused in order to achieve a desired outcome. Token reinforcements proved quite effective in controlling children's behaviour, especially disorderly behaviour.

Organisational heads whose job is to motivate employees, face much the same situation as school administrators and teachers whose job is to motivate the students. The problem of motivation in the two situations is the same though the specific goals and behavioural patterns differ. Managements carefully plan and

establish controls and expect their workers to follow them meticulously. Managements also assume that a person will perform effectively to the extent that his rewards are made contingent upon effective performance. Schedules of reinforcement (See chapter on Learning) like piece-rate payments, sales commissions and bonuses, etc., have been shown to increase the consistency and effectiveness of behaviour. Thus, extrinsic rewards are believed to lead people to engage themselves in behaviour which they think will lead to desired ends.

Intrinsic motives or rather intrinsically motivated activities are those activities for which there are no apparent rewards except the activity itself. The activities are ends in themselves rather than means to ends. There is no apparent reward, for here the person only derives enjoyment. It is pointed out that an activity cannot, in any meaningful sense, reinforce itself but rather, what it can do is to bring about certain internal consequences which the organism experiences as rewarding. Many activities are intrinsically motivated. People spend large amounts of time, money and effort on solving puzzles, painting pictures and engaging in other play activities for which there is no external reward. The rewards for these activities are not obvious or external. One is engaged in these activities not because they lead one to an external reward (like money, praise, food, etc.,) but because they bring about certain kinds of internal states which one finds rewarding. The notion of extrinsic reward or motivation could be easily traced through reinforcement, rewards, punishment, etc. However, serious limitations of extrinsic motives were patched up by intrinsic motives. It is claimed that human beings are intrinsically motivated to learn; they want to understand about themselves and the world around them, and to engage in effective dealing with their environment. The school children of today especially those who belong to middle and high socio economic groups approach learning with a desire to discover something rather than merely as a task to be performed. The child then develops a tendency to

work with the autonomy of self-reward or be rewarded by the discovery itself. It is claimed that reward and punishment in learning situation interferes with competence and efficiency of performance. Schools and colleges are leaning towards discovering and providing subjects which interest and fascinate students and refraining from using extrinsic rewards. The idea is to make activity its own reward and produce more creative and meaningful learning. Here, it provides a chance for the individual to interpret success and failure as information rather than as reward punishment.

The philosophy of intrinsic motivation has been well captured by some of the schools and colleges which are referred to as 'progressive schools', 'free schools' and so on. A critic of contemporary education who supported intrinsic motivation once said, "We destroy ... the love of learning ... in children - by encouraging and compelling them to work for petty and contemptible rewards, gold stars, papers marked 100, A's on report cards, etc." Extensive damage is caused by the exploitation of extrinsic motivation. The use of rewards and punishments to encourage learning will only interfere with the learning process because it will make the child's learning dependent on the reward, and cause it to do things that will lead it to the reward in the easiest way even if this leaves it less learned. Once this is generalised to other than school situations, a person will, throughout one's life, do things only if there is perceptible extrinsic reward. If this becomes the universally accepted norm then what would be left in this world would not be mankind but "Man unkind"! At this point we may briefly refer back to the humanistic model which envisaged a hierarchy of motives and also an evolutionary process in motivation. It may be seen that the self-motives which occupy the highest position in this hierarchy are by and large intrinsic in nature compared to the lower order motives which are relatively extrinsic. Here one may see the relationship between extrinsic and intrinsic motivations as techniques of managing motives. Intrinsic motivation as a technique will most

probably be successful only if the basic extrinsic motives have reached an optimal degree of satisfaction. By and large self-respect is easily sacrificed in the face of hunger of any type, and greed is not uncommon. But there can be instances where intrinsic motives assume priority even over basic extrinsic motives.

In this chapter on motivation our attempt has been to present to the students the findings and views of psychologists on the nature of motivation. Different theories and attempts at classification of motives were examined. In addition, various issues like the role of unconscious motivation, inter-relationships among motives, measurement of motives were examined. While there are still points of controversies, certain points of consensus have emerged. Thus it is agreed that almost all forms of complex human behaviour are motivated. Secondly, it is agreed that motivational patterns go through a process of development, are influenced by one's experiences, social factors, and cultural factors. It is also known that in many instances the behaviour of an individual results from a combination of motives. Further there are instances where there can be a conflict between motives resulting in non-adaptive behaviour. But the most important point is that motives and needs can influence one's cognitive activities like perception, learning and thinking. From the practical point of view it has been shown that motivation can be developed enabling people to improve their output and performance resulting in benefits not only to the individuals but society at large. Finally it has also been shown that motives can be measured. Today motivation research has assumed a lot of importance. This has a lot of implication for disadvantaged groups and underdeveloped societies. If individuals in these groups are properly motivated, this can definitely result in a better utilisation of their abilities and effective exploitation of other resources. It is known that very often differences in performance output and achievement are basically due to motivational factors and not abilities or intelligence per Se. It is, therefore no wonder, that psychologists have evolved a number

of motivation development programmes for slow learners, workers, students, executives and many others. Incentive schemes evolved by various organisations are a direct result of our understanding of the nature of motivation. Above all, our knowledge of motivation has served to change even the idea of human natureS Today we know that the humanbeing is not always rational. At the same time we also know that he is not always selfish and looking for material rewards. The human being can be motivated to be helpful, selfless and altruistic, deriving satisfaction, happiness and even joy by being able to contribute to the good of society and the good of others. On the other hand we also know about the factors which contribute to non-motivation, demotivation and negative motivation. Such knowledge can go a long way in eliminating conditions in life situations that can lead to the above and has lessons for learners, parents, teachers, managers administrators and in fact for, everyone.

CHAPTER - VI
PERSONALITY DEVELOPMENT

The popular view of personality stems from certain features of an individual which are more or less superficial or external. These features are speech, quality of voice, manner of dress, charm, beauty, motor coordinations, physique or height, gestures and mannerisms etc. Thus, a personality may be adjudged as good or bad, strong or weak, solely on the basis of one or two such features. This fact is evident when you ask someone to describe the characteristics of a good or a poor personality.

The word 'personality' is derived from the Latin word 'persona' which means a mask or false face which Greek actors used to wear when acting on stage. The original meaning has remained essentially unchanged and today too a layman associates personality with external appearance because one's personality is one's stimulus value, or the impression one's behaviour, albeit not external behaviour only, makes upon others.

We are, however, more concerned with the fundamentals and with the objective criteria which determine personality. Even after many years, when a person has grown old and the bloom of youth has worn off, something remains till his last breath, which may be called the inner or real personality. In this sense the word 'personality' refers to a person's characteristics, both acquired and inherited, which make him unique in terms of the impression he makes upon others. Though personality does not imply physical beauty or handsomeness alone, a man or a woman with a good personality is magnetic and attractive, and may be called a good soul, a marvellous character, or a remarkable individual. In almost every organization there is a person to whom an affectionate appellation such as "grand old man", "noble character" or "wise friend" is applied; he is one who is cultured, congenial, efficient, and lives a life of high ideals. Many of these people may not be handsome physically, but their social stimulus value is exceptional.

MEANING, NATURE, CONCEPT, TYPES

Most adjectives, used to describe the total personality reveal at best, a particular aspect of the total behaviour. Each adjective describes the behaviour of the total organism from a particular standpoint. In no way do such words reflect the total personality. An aggressive personality indicates nothing more than extreme self assertion or a violent attitude, a strong personality no more than excessive influence upon others, and a stiff personality just signifies a cold, unapproachable nature. Other adjectives like reticent, melancholic, dominant, radiant and others have similar distinctive connotations.

The following definitions and views explain the meaning, nature and concept of personality:

Personality is the individual's characteristic reactions to social stimuli, and the quality of adaptation to the social features of his environment (Allport, 1934).

Personality is what makes one effective, or gives one influence over others. It is one's social stimulus value (May, 1932). It (personality) is the quality of the individual's total behaviour, it is how he acts, when his activity is taken as a whole (Woodworth, 1929). It (personality) is the sum total of what an individual has come to be by learning the cultural products of social evolution (Morrison, 1934). Personality is the integrated organization of all the pervasive characteristics of an individual as it manifests itself in focal distinctness to others (Hartmann, 1941).

Personality is synonymous with the idea of the organismic functioning of the total individual including all his various verbally separated aspects, such as intellect, character, drive, emotionalized attitude, interests, sociability, and personal appearance, as well as his general social effectiveness (Thorpe, 1938).

It (personality) is the complete and unified outcome of all the developmental processes through which an individual has passed (Judd, 1939).

These definitions have a few common elements, either expressed or implied, which reflect the meaning and nature of personality:

1. Each person is first an individual by inheritance and then acquires a personality by growing in a social world.
2. Personality is one's total integrated behaviour and not just one or more aspects of behaviour.
3. The word 'personality' stands for a concept which is determined by a person's social stimulus value.
4. Personality is not something static like colour or height, but the totality or unity or an individual's actions.
5. Personality does not merely unfold; a person uses his capabilities to make adaptations in the social world.
6. Personality is a social concept. It would have no meaning if the individual were not a social animal. It is only because we interact with others and others interact with us that we have a personality. If a tree crashes in the forest, there is no sound unless there are ears to hear. Similarly, there is no personality unless there are others besides an individual himself with whom he acts and interacts.
7. Personality is a dynamic concept. Imagine the type of person you were while in school, the type while in college, and again the type you are now.
8. Personality is all that a person is.
9. As personality is the end-product of one's heredity and environment, which is different in each individual; it is something unique and distinct.

A person's behaviour is the outcome or offshoot of his personality. Each individual behaves differently because his personality is different from that of others. In fact, personality is

the sum total of our ways of behaving especially towards other persons. It is not an elusive quality which radiates something. It is complex, the result of a lifetime of experiences and influences. Superficial changes like adopting an artistic hairdo, a cosmetic coating on the face, pencilling of the eyes, or cultivation of certain mannerisms fail to affect our true personalities which go much deeper.

Personality is not merely the sum of aspects or traits, but is a part of a dynamic organism. It is always in action, responding to situations in various ways, some of these ways becoming more or less habitual, like being thrifty or friendly. "Personality," says Thorpe (1938), "is a balance." How the individual will behave depends on who the other person is and what the circumstances are.

Two terms which are often confused with personality are temperament and character. The former refers to the innate ingredients of personality, such as natural tendencies and organic drives, the effects of glandular balance on emotions, or other physiological causes which affect a person's behaviour. Character is personality evaluated against the current standards of the cultural pattern. Thus, it refers to traits like honesty, truthfulness, or their opposites, which are either approved or disapproved of by society. Personality, on the other hand, results from interplay of the inherited constitution with all the forces of the environment from the moment of conception onwards. The environmental forces acting within the uterus, help to shape one's future personality until birth, after which the forces which work on the personality range from the physical conditions of upbringing to the ideas and attitudes of parents and others with whom the child comes in contact

Type Theories of personality were prominent in ancient times. The Greeks enunciated four types of temperament-sanguine (self

assured) choleric (irritable) melancholic (depressed), and phlegmatic (sluggish), depending upon the relative prominence of blood, yellow bile, black bile, and phlegm respectively. Kretschmer classified two types of personalities-schizothymes (inflexible, suspicious, secretive) and cyclothymes (easy going, adaptable, generous) and associated these with an asthenic or lean body form (tall, thin), and pyknic or thick body build (short, fat) respectively. Again, Sheldon links three types of body build with three personality types-those who are sociable and love comfort (rather fat), the energetic and assertive with a liking for muscular activity (exceptional bone and muscle growth), and the withdrawn who have a liking for mental activity (rather thin). Many other types were proposed, but this system of classification is now considered to be dubious because the psychology of individual differences has led to the belief that each individual has a unique personality, which forecloses the possibility that there could be only a few or even some types of personality.

Spranger propounded the value theory of personality which classifies people into six types-theoretical, economic, political, aesthetic, social and religious, according to the chief value they believe as important. Berman enunciated an endocrine or chemical basis of pexsonality. According to him, a personality may be adrenal, that is, vigorous, energetic, tenacious and efficient; and prepituitary, i.e., predominantly masculine. Modern psychology, however, does not accept personality being explained by glands. Jung makes a distinction between the extrovert or socially cooperative and the introvert or unsociable types.

Vernon (1953), on the basis of factor analysis, isolated two personality factors-emotional stability versus neuroticism, and extroversion versus intro version. This approach has one advantage over the type approach in that a slow gradation from one extreme of the dimension to the other is permitted, i.e., introversion extroversion. (With several middle categories between the two ends of the scale.)

Freud's personality theory recognizes three main components of personality, namely, id, ego, and superego which are in constant interaction with the outside world. The id, located in the unconscious mind, consists of man's instincts, natural urges and animal desires, is amoral, primitive, and non rational demanding immediate satisfaction The ego is consciousness, will, reason; it is in constant touch with reality and also with the id. Its function is to keep the balance between the constant strivings of the id, the discipline of the superego and the demands of the outside world. The superego, is the conscience, ideals, the moral nature. When born, the child is all id and hence his primitive natural behaviour; his own self being most prominent, the only reality for him is his self pleasure and self satisfaction which he regards as the sole aim of his strivings. He soon becomes conscious of things other than himself and the id differentiates into the second aspect, the ego, so that his pleasures become somewhat subject to what the people or the conditions around him permit. As the child grows, further differentiation occurs and he develops the third aspect, the superego; this happens when he assimilates and incorporates, or introjects, the values and standards of his parents, teachers and peers. The superego tends to criticize the ego and makes it conform by bringing about feelings of guilt. An individual excited by an unbecoming sex desire (id), struggles to control it (pressure of reality), (ego), and finally overcomes it (superego) on the ground that he should not indulge in such an immoral act. Freud claims that the ego, by resolving the conflict between the id (extremely immoral demands), the superego (extremely moral demands), and the external world, shapes the individual personality. To overcome such conflicts, the ego employs repression or other defence mechanisms as illustrated below

REPRESSION

This is the exclusion of painful and unpleasant material from the consciousness. It is an unconscious process, and the subject does not realize that he is repressing certain sentiments. As the

infant grows up, he soon realizes that some actions and feelings of his evoke disapproval from adults, and he unconsciously tends to push these forbidden impulses out of his consciousness by the mechanism of repression. This reduces the child's anxiety. Repression may be manifested in such behaviour as laziness, social withdrawal, secretiveness and indecision, all of which are of value to the individual for reduction of anxiety.

PROJECTION

The thrusting on others of unconscious wishes and ideas which would be painful if accepted as part of one's self. A child playing with a doll often expresses her underlying needs, purposes and conflicts by making the doll say the necessary words or indulge in the necessary acts. The child's wrong thoughts, acts or feelings are thus transferred to the doll. We adults attribute to others our own sins and wrong acts or feelings. This is projection.

RATIONALIZATION

The unconscious manipulation of our opinions to avoid the recognition of the unpleasant; for example, the loser of a game saying that he had wanted to lose. Giving unreal reasons for real ones when defeated saves the loser from frustration and creates "not bad" impression on others.

REACTION FORMATION

In this mechanism, one tendency is hidden from awareness by its opposite. Those who have been cruel to others all their lives, later, unconsciously develop, an attitude quite opposite to the previous one, i.e., they become extremely kind and indulgent.

CONVERSION

The individual unconsciously develops certain physiological symptoms which express symbolically both expressed wishes and fears and the defence setup against them. Thus, functional paralysis of the legs in an army officer on the battle field enables him to

escape the fear of the enemy without loss of face. He does so by proceeding on leave.

There are several other defence mechanisms, employed by individuals to seek temporary adjustment, relief and satisfaction when faced with the unpleasant realities of life. These are the methods of adjustment which the ego resorts to in a bid to adapt to soften failure or to seek inner harmony

Moreover Freud put forth a theory of psycho sexual development In infancy there is first the oral stage where the manner of obtaining pleasure is through sucking swallowing biting then the anal stage where pleasure is obtained by expelling or retaining and finally the phallic stage where pleasure is obtained by touching, and looking at the genitals, by investigating and questioning. If the infant experiences such treatment as over indulgence or severe frustration at any of these stages the growth of the ego may be severely affected resulting in distorted personality characteristics later on.

Adler is of the opinion that man being a social animal has to make social adaptations and as a consequence, he develops the kind of personality he has. A crippled child feels inferior and tends to withdraw from the social situation, gradually becoming unsocial and diffident. It is not, however, the physical handicap which makes him feel inferior, it is the unfortunate, though inevitable, comparison with the majority who are not handicapped. Thus, physical factors influence personality because social factors make them important.

PERSONALITY TRAITS

A trait is a relatively permanent and distinctive mode of behaviour. It is any identifiable attribute of the total organism which is manifested in behaviour. A trait is a tendency to react in a defined way in response to a defined class of stimuli.

Traits are familiar in everyday thinking. Nearly all adjectives which are applied to people are descriptive of traits, e.g., happy, stubborn, lucky, confident etc. In fact, the desire for linear measures, in the field of personality, analogous to those for size, reaction time, temperature, led to the postulate that personality has dimensions or traits. The postulate that traits exist is based on three facts:

1. Personalities possess considerable consistency, i.e., a person shows the same habitual reactions over a wide range of similar situations.
2. For any habit, we can find among people a variation of degree or amount of this behaviour; individuals differ in the degree of every trait they possess.
3. Personalities have some stability, that is, a person possessing a certain degree of a particular trait this year usually shows a similar degree a year later.

These facts lead to the conclusion that personality traits are habits capable of being evoked by a wide range of situations. Any value of the trait approach to personality assumes that a trait describes the significant variations of behaviour economically without reference to unduly specific behaviour. A trait is a composite based on many specific behaviours covered by the name given to it. The word “trait”, for instance, is used to indicate that a person is perfectly honest, and to predict his behaviour in any situation involving honesty, though in most cases he may have an intermediate degree of the trait which means that he may be honest in some situations but not in others. The extent to which a trait gives a faithful description depends on the extent to which the behaviours collected under the trait definition are coherent and present in the same person.

DEVELOPMENT OF PERSONALITY AND FACTORS INFLUENCING IT

DEVELOPMENT OF PERSONALITY

A neural-chemical integration in human organization is made possible by the operation of the nervous and circulatory systems. The elements that contribute to personality are, in general, the physical structure, mental capacities, aptitudinal abilities and emotional status.

Physical structure grows and develops almost automatically after birth. Within the pattern of this growth may lie some of the elements that affect behaviour traits. One may be unusually tall or unusually short, overly stout or very lean, have a large nosed face or be flat footed, or symmetrically or asymmetrically featured. One may even suffer from some physical handicap., The physical factors may themselves have little or no effect on one's behaviour characteristics but others' attitude as a result of the physical appearance may affect the pattern of the traits that forms the personality, Ridicule or even a stare at a crippled or dwarfish individual may give rise to the trait of introversion.

The degree of one's mental brightness or dullness also determines the extent to which he is able to conform to social standards and thereby pattern his behaviour. Feeble mindedness, for example, may find its origin in the germplasm; accordingly, the personality traits of the subnormal would differ from ones of the so-called normal-varied as the latter may be.

A special aptitude may evoke tendencies to behave in one way rather than another. Not all artists are temperamental or easily aroused emotionally. Nevertheless, the sensitiveness that may accompany artistic superiority, the stimulation or even spoiling of the successful artist by an admiring audience, and the emotional stresses that accompany the perfecting of an art-all these may contribute to the developing of certain behaviour traits that are

associated with artistic aptitude. Conversely, many gifted persons display well-balanced and emotionally controlled behaviour traits. Emotional development shows certain changes or patterns as the individual grows from infancy to childhood a then to adolescence and adulthood. A young child's emotions develop with experience but are superficial and variable. Anger and fear expressed as differentiated emotions in later life are manifested as general distress during infancy. A six-month old child may express his anger through facial and other overt expressions. The infant may express his rage by lashing out at the world in general because he is unable to direct his emotion at the offending object. Later, he is able to concentrate the expression of his emotion upon what aroused it. Observable changes also begin to occur in the child's expression of fear and in his reactions to other emotion-arousing stimuli. The changes in ability, that cause him to exercise greater motor control as he is aroused, parallel the development of his mental ability.

The child refines his expressions of anger or other emotions as he moves from infancy through childhood into adolescence. This he does as a result of training and of gaining control over emotional behaviour. The child, who squeals and dances with delight, later may become the adolescent who expresses his emotions in a more restrained fashion, because the older child is expected to be less demonstrative in his expressions of emotional appreciation.

This change in overt expression of emotions does not mean that emotions no longer play an important role in a young person's life. He still needs adequate stimuli for emotional experiences. As he grows in physical strength and understanding, he responds differently to what were earlier considered by him to be threats or thwartings. He should finally come to achieve the ability to adjust his behaviour in terms of what is happening around him.

As the child's age increases, changes again occur in emotional expression and the ways in which various emotional reactions are aroused. These changes are caused by the accumulation of knowledge and the utilization of the apperceptive mass or the total background of experience. A single experience that occurs in a sequence of events may alter the total reaction thereafter. When one experiences greater delight in a certain situation, any similar situation encountered subsequently may tend to arouse a pleasurable feeling.

A situation that caused pleasure at one stage of emotional development may lose that stimulus value at the next stage, just as events that cause fear or anger may not arouse any emotion at later times. New knowledge, new interests or other factors may bring about this change. Interest, desire, and a degree of thwarting now determine the direction, duration and intensity of an emotional expression.

Gradually, with increasing maturity, while passing through the stages of childhood, adolescence and adulthood, the individual's emotions become more easily classifiable as fear, anger, hate, joy, jealousy and grief. Thus, his real emotional experience can be more easily identified as he grows in ability to convey his inner feelings to others. His appreciation of values, desires, and ideals, his interest in and reaction to persons and institutions, his responsibilities, and the ideals of 'significant others' affect his total reaction or his emotional outlet (Crow and Crow, 1964, pp. 86-88).

The endocrine or ductless glands, so called because they discharge their hormones directly into the bloodstream, appear to influence the behaviour of individuals according to their balance or imbalance. Over secretion or undersecretion by any of these glands may exert a tremendous influence upon an individual's development and consequently upon his personality (Hoskins, 1933).

The endocrine glands appear to be a complex interdependent system which maintains the chemical balance of the body. Growth and health are significantly dependent on them and our mental and emotional lives are both the cause and the effect of their function. If the glands function normally, we are well and happy; and also if our emotional life is happy, the psychic effects on the endocrines will be favourable.

FACTORS INFLUENCING PERSONALITY

Many environmental and other factors influence the development of personality. An individual's more or less consistent pattern of behaviour as he interacts with others, generally termed as his personality or personality traits, has its origin in heredity, i.e., his inherited potentialities. However, his specific behaviour responses in one or another situation result from the development of his potentialities as these are stimulated by environmental conditions in which he develops and the experiences which grow out of human interrelations. The interaction between nature and nurture continues as the child experiences home and school living. Home is the place where the foundations of personality are firmly laid. The parents' attitude toward the child, toward each other, and toward other people, events and objects exercises a potent influence upon the child's developing personality (Symonds, 1939). Factors such as enjoyment of group, family life, little if any work done away from home by the mother, amount of punishment, welcoming of the child's friends to the home, emotional control and good health of parents. and sharing of joys and sorrows with the parents may lead to good adjustment on the part of adolescents (Crow and Crow, 1956; Landis, 1952).

Economic conditions and social factors greatly determine some of the important personality traits. Socioeconomic inferiority is a well known cause of the development of undesirable personality traits among young people. A low economic status and a maladjusted personality often go together, though not in all

cases. A child may be affected adversely by his underprivileged state, especially if he is mental) below normal. However, the more intelligent individuals have shown themselves capable of rising above poverty conditions. Parental attitude is a common determining factor. If parents are able to build the child's morale, howsoever adverse t circumstances, the child may be able to steer clear of the forces that tend to distort his personality.

School is another factor that influences personality development. The suitability of curricular offerings, teacher attitudes, playground activities, and the home background of training that the child brings with him to the school, are all important for the makeup of the child's future personality.

Social factors such as the child's early social contacts-what kind of persons they were and how they treated the child-his school mates and later, his friends influence the child's ideas, attitudes and even his intellect and personality. His companions affect his morals and conduct. Gangs which flourish in bad neighbourhoods lead to children becoming delinquents.

Cultural factors including customs and traditions are literally built into the organism. It is the customs which determine even the interval between meals, the time of weaning, type of toilet training and the kinds of stimuli to which we respond emotionally. All the behaviour patterns which the parents transmit to their children are cultural products. Important among these are moral ideas, social attitudes, and interests. Culture is, in fact, the ground from which personality emerges.

Ordinal position in the family-whether oldest, middle, youngest or only child-influences the personality pattern to a great extent. Whether the child strives for superiority or feels inferior or isolated, as also his emotional relationship with his parents, brothers and sisters, and several other personality traits depend upon this position.

Being one of an unfavoured minority or racial group has a considerable influence on personality. In the United States of America, for instance, a jew or negro at one time reflected in his personality the prejudice and discrimination constantly directed against him. While some of the people belonging to such minority groups accept their inferior status without demur or protest, others develop aggressive attitudes. Thus, it is clear that personality development results from many influences that operate in and upon a child.

PERSONALITY INTEGRATION AND ITS EDUCATIONAL IMPLICATIONS

Personality is the result of integrated growth. By the time adulthood is reached, personality is so completely integrated that many of the constituents acquired in early life have lost their identity. For this reason, many personality problems in adults are not understandable without a great deal of digging into their early foundations.

The older a person becomes the more set he becomes in his ways, that is, he develops a fixity of behaviour with respect to certain types of social stimuli. The pliability of early years is lost. The saying that you cannot teach an old dog new tricks may be based on this observation.

Ideals and purposes, or one's set of values, have much to do with the processes of personality integration because the former organize behaviour, give it direction and purpose, make it consistent and establish habitual patterns of behaviour that are the hallmark of a well-integrated personality.

The implications of personality integration in the field of education are obvious. The problem is not one of how to make the child an integrated personality. It is a matter of establishing ideals, goals, values and codes of conduct that go towards

achieving this state. It seems difficult for children to learn to be courteous and to respect the rights of others. They seem slow to learn adult manners or to be honest in their dealings and the difficulty is not in the learning but in their realizing the importance of learning these things; it is a matter of motive. The child's attitude is one of indifference: 'What does it matter' 'Why should I learn to respect the elders?' The schools should first be clear as to the patterns of behaviour which are desirable in young people. They should then arrange the environment in order that these desirable patterns become desired by the children so that the learning of these patterns may become easy.

ASSESSMENT OF PERSONALITY-OBSERVATION, QUESTIONNAIRE, INTERVIEW, RATING SCALES

In any attempt to assess personality, certain incorrect assumptions are usually made. These assumptions make the task of personality appraisal somewhat difficult. One assumption is that traits exist and that they are static. Another is that the sum total of a person's traits equals his personality, that is, if his score on courage, confidence, dominance, and so on is added up, it gives a composite score which is an index of his personality. The third assumption is that personality is sufficiently objective to be measured with adequate validity and reliability; and the fourth assumption is that a given set of environmental conditions will produce certain uniform results. All these assumptions are somewhat hazardous and are not a firm basis on which the measurement of personality should rest.

The halo effect presents another difficulty. If a person is outstanding in one particular trait, this trait tends to spread a sort of artificial aura over his other traits causing the observer to overestimate the person's total personality.

Thus, the difficulties of personality measurement are too real to be ignored. If the main purpose of measuring personality, as it

really is, is to be able to predict how a person will most probably act under certain circumstances, we need to increase the reliability of such prognosis to the greatest extent possible. Some typical methods of assessing personality are:

Observation under controlled conditions

In this method, a subject's behaviour has to be observed by more than one trained observer who are capable of isolating the particular form of behaviour to be appraised from other incidental behaviour responses. It is, however, difficult to make a natural observation of the individual as the very fact that he is being observed in the laboratory affects the reliability of the results. Ideally, a person's conduct is best observed by a group which works without his knowing that he is being evaluated.

It would, perhaps, be best to plan such observations by providing certain tasks which, when performed, manifest behaviours reflecting the personality traits that are to be appraised. In other words, the traits should be defined first of all, behaviours pertaining to the definition of each trait should then be thought of, tasks should thereafter be laid the performance of which would involve the said behaviours and lastly, a trained psychologist should observe the behaviours involving a trait as objectively as possible to rate the individual on that trait.

INTERVIEW

This method has the advantage of first hand contact with the subject, for personality is, after all, one's direct stimulus value. It has, however, the disadvantage that only a segment of one's behaviour is examined. The reliability of such limited sampling of a cross-section of behaviour is naturally low. Somewhat like medicine where a patient's verbal account of his symptoms is utilized for diagnosis and evaluation of his treatment, in psychology also self report through interview has been extensively used for the study of personality.

The interview, however, must be preplanned if it is to be free from the interviewer's subjectivity and if it is to yield reliable and adequate data regarding personality. Again, the traits to be assessed must be defined, and the questions framed in such a manner that the answers show the presence or absence of a trait. If the set questions fail to elicit the expected answers, additional questions should be put to the subject and the interviewee rated or ranked on a trait during or immediately after his interview. A trained psychologist can accomplish this task, which otherwise is very difficult, to yield the reliable and adequate information necessary for the appraisal of personality.

QUESTIONNAIRE

This is another self-reporting technique which came into vogue when the attempts to reduce personality to psychometric terms grew out of the need to devise mass processing methods capable of greater speed and standardization than was permitted by interviews. As in the case of intelligence testing, World War I brought into prominence the possibilities of group procedures for eliciting self reports.

The questionnaire is essentially a standardized interview, where the sensitivity of individual questioning is sacrificed for speed. Many forms of questionnaires and inventories have been devised as means of obtaining from the individual an appraisal of himself in various trait areas.

The Woodworth personal data sheet was the first important questionnaire and was widely used in processing world War I recruits. It is a collection of questions regarding symptoms considered significant by psychiatrists for detecting enuresis, daydreaming and the like. This instrument was found useful for detecting maladjusted soldiers and was valued especially because adequate individual interviews were found totally impracticable in war time. Among the traits frequently probed were neurotic

tendency, introversion-extroversion and dominance. Items were chosen which by definition were related to each trait being measured: “Do you worry for neurotic tendency; “Do you lead a group “ for dominance, and so on. The subject was expected to mark the answer which was the most nearly correct in his case. However, the subject may find it difficult to answer a question simply with an ‘yes’ or a ‘no’. This difficulty is obviated somewhat by the method used in the Bernreuter personality inventory in which the subject is given three choices: Yes! No? Sometimes. Do you often feel just miserable? Yes/No? Do you usually prefer to work with others? Yes/No ?-such questions are asked.

Where the subject is undecided, he has to tick the third choice, i.e.? In the Pressey X-O test, the purpose of the questions is disguised from the subject. The test is made up of 25 questions, each question consisting of five words or phrases. The subject is required to cross out certain words (Crow and Crow, 1964, p. 201):

Two sample items are given here:

1. Cross out everything you think is wrong: begging, smoking, flirting, spitting, giggling
2. Cross out everything you like or are interested in: fortune-telling, boating, beaches, mountains, vaudeville.

The subject’s reactions to these words lead to certain conclusions concerning his traits.

Another test is the Allport and Allport A-S reaction study (Crow and Crow, 1964, p. 202) which attempts to measure the degree of an individual’s ascendance or submission. The questions in this test are arranged in a form similar to the following:

Have you ever crossed the street to avoid meeting someone? frequently occasionally never. One of the given three answers is to be ticked.

The Downey will-temperament test based mainly on hand-writing, is a kind of performance test in which the individual is asked to indicate his customary modes of behaviour by the way he responds (by writing on the answer form) to the direction given to him. For example, on a line of a given length he is expected to write 'United States of America'. Such facts as the number of letters that extend beyond the line, or the letters or words omitted, are considered to be indicative of a specific personality trait. Again, a subject writes a sentence at his own normal speed; then writes it as fast as he can. The difference between his two speeds indicates freedom from inhibitions. His ability to change his writing speed shows how flexible he is. His success in writing several words on a line slightly over an inch long shows his coordination of impulses. This test has been said to be novel and intriguing. It is also difficult to score. No one quality like hand-writing can show personality trends adequately and hence the inadequacy of this test (Crow and Crow, 1964, p. 202).

In most of the questionnaires the subject may know what the desired response should be and give it, but his response may not be an indication of his actual behaviour practice. For example, a question that appears in the Thurstone personality schedule is "Are your feelings easily hurt?" This is a good question if the subject answers it truthfully. Who wants to confess that he is a sensitive soul? Moreover, many persons who are sensitive to criticism do not recognize the fact that they possess this trait. Rather, they are inclined to believe that unfavourable comments made to them or about them by others are unjust and not based on facts.

RATING SCALES

Here, the rating of an individual's trait or traits is done by others who know him. The purpose is to compare one individual with other members of the group resulting in a subjectively derived judgement of the strength or weakness of a trait or traits

supposedly possessed by the individual. The rater must know all members of the group well if he is to make comparative judgements that are more or less accurate. The rating scale is so constructed that the rater may give his evaluation of an individual in terms of a scale that indicates varying degrees of possession of a particular trait. These degrees are usually indicated by numbers from 3 to 1, 5 to 1, 7 to 1, or 10 to 1, and descriptive phrases are given below each numerical value. Most often, a 5-point scale (5 to 1) is used as it allows a fair discrimination between the ratees in a group and is comparatively easy to administer and rate. The three-point scale is considered too rough to allow accurate rating while a scale which has more than 5 points calls for fine discrimination which a rater finds hard to make out accurately. An example of a 5-point scale that is in general use is given below:

Social adaptability	Excellent	Above average	Average	Below average	Poor
	5	4	3	2	1
	Fully at ease in group	Usually at ease	Able to adjust to a group	Ill at ease	Unable to adjust to a group

The value of the appraisal of an individual's traits by competent judges depends upon the clearness and definiteness of statement of the items listed (too often the items are vague or too all-inclusive), and the care and accuracy with which the judgements are made.

Rating scales involve the qualitative description of limited aspects of a person's traits. Objective rating is not always easy to ensure. This may be possible to a certain extent if the rater is encouraged to rate an individual objectively, honestly and accurately and strictly in relation to other members of the group to which the individual belongs. A rating scale involves the rating of a person on his traits that others (raters) are well familiar with. In other words, the rating scale as a technique of personality assessment should be used for distinctly social traits as these traits alone can be rated by others.

Some of the precautions that are necessary to ensure reliability of rating
scales are:

1. Trained raters should rate under carefully controlled conditions.
2. Trait acquaintance must be ensured, i.e., the rater should not only know the ratee but should also have observed the ratee under situations related to the trait to be rated.
3. The average of ratings by two or more observers should be taken in order to rule out the raters' individual bias.
4. The instructions to the raters must be precise and the definitions of the traits must be clearly stated on the rating scale, to make the rater's task easier.
5. The rater must discount the 'halo effect'
6. The 'generosity error' of the rater should be avoided. In other words, the rater should not think, "even though this ratee is poor, let me at least rate him 'average' or this fellow looks impressive, let me give him 'excellent'.

As many of the weaknesses of rating scales are too difficult to be removed completely, psychologists advise that rating scales should be used to supplement other, more reliable tests and not as independent measuring instruments.

PROJECTIVE TECHNIQUES

Here the subject is presented an unstructured stimulus i.e., a vague design or a dim picture. By looking at it, the subject gives expression to the most readily available forces within himself. He does not know what inferences the experimenter intends making because his attention is focussed on the task and it is not possible for him to guess at its more remote psychological meanings. Favourable conditions are thus created for unselfconscious revelations from the hidden regions of personality. These tests are closer than any other test, to grasping the whole personality at once and yielding a tentative portrait of the entire personality.

The subject gets a chance to expose his private world of meanings, significances, patterns and feelings, without knowing what his expressions may mean or how they may be interpreted. In this sense projective tests are superior to all tests or methods in which the subject, guessing the meaning of his true responses, tends to give false responses in order to give a 'good account' of himself.

When a person tells what a cloud looks like to him or gives him own interpretation of a picture containing people or situations, he projects into his account something of his personality. If he interprets several items in the same general way, this may reveal important trends to thinking, attitude, interest, and emotion. This principle is the basis of all projective tests.

The Rorschach inkblot test is the best projective test. It is composed of 10 cards each containing a rather elaborate inkblot; 5 inkblots are in colour and 5 in grey and black. The subjects study one blot at a time and tell what they think each blot resembles. The responses are recorded, and then the cards are shown to the subjects a second time and they are asked to elaborate any ambiguous interpretations and explain which parts of the inkblots led to their responses. Results are scored against three main criteria-do the subjects react to the whole blot, to a part thereof, or to a small detail of it? Do their responses involve movement, form, colour or all the three combined? Is the form clear or blurred? Do subjects see human figures, or animal figures, or inanimate objects? Seeing whole figures indicates high intelligence and the ability to synthesize. Predominance of forms in motion, especially human forms, shows vivid imagination. Marked responses to colour show impulsiveness, if not emotional instability. The seeing mostly of animal forms shows a lower intelligence and stereotyped thinking. The noting of small,. unusual details shows introversion and possible emotional conflicts, and the noting of three- dimensional shading effects shows anxiety. A

preponderance of responses determined by shape or form means good control and harmony between the intellectual and emotional aspects of personality (Klopfer and Kelley, 1942).

Murray's Thematic apperception test (TAT) is considered to be the most elaborate and systematic study of personality. The subject has to interpret a picture by telling a story about it-what is happening, what led upto the scene and what the outcome will be. Like the Rorschach test, the stimulus is unstructured. The pictures chosen are somewhat vague, and allow varied interpretations. Thus the responses are dictated by the past experiences, conflicts and wishes of the subject.

Essentially, the subject projects himself into the scene, identifying with a character just as he vicariously takes the place of a movie star when seeing a photoplay. Unlike in the Rorschach test, the major analysis is based on the content of responses rather than on the formal aspects. TAT-identifies the subject's drives, conflicts and attitudes towards himself. The test is composed of 30 pictures-l0 for males, 10 for females and 10 for both. The subject is led to believe that his imagination is being tested. Final interpretation is made by studying all the stories of a subject. The general quality of his thinking, originality, logic, ability to exercise control under emotional stress, bizarre language, habits of attacking problems, inhibitions and several other aspects of personality are revealed in almost all stories-as in these stories he raises problems or situations, delves into reasons for them and attempts to solve or finalize those problems for the characters in the pictures. He identifies himself with the situations and his own personality is thrown in, which the psychologist receives as if on a platter (Murray, 1938).

The word association test is another projective test. It was devised by Jung, and is an important psychoanalytic technique. In this, the subject is given stimulus words and asked to respond

with the first word that comes into his mind, the time of reaction being noted with a stop watch. When the reaction time is unusually long, or the response is unusual, the existence of a repressed complex is suspected. The method is useful also for exploring the mental content and the various interests of the individual.

Another method is the psycho-galvanic reflex. Muller, a Swiss engineer, accidentally discovered that when one is in an emotional state, the resistance offered by the body to an electric current is temporarily lowered and the diminution of resistance seems to be proportional to the intensity of the feeling. This has been found to be a feasible method of investigating emotional susceptibility and has been used successfully alone, and in combination with the word association method (Ross,1961,p. 237).

Case study

When the causes of children's difficulties in school work or in adjustment are not readily apparent from the usual data contained in school cumulative records, a more intensive study has to be made by the teacher or the school psychologist to whom the child is referred.

A case study has a definite direction and purpose. The details included in it should, therefore, bear relevance to the behaviour which initiated the study. The following kind of data must be included in the case history:

1. Data about the family, neighbourhood and community, and the sources from which such information is obtained
2. Physical characteristics and selected items from the medical record of the child
3. Mental arid physical developmental history of the child
4. The child's school achievement (academic, behavioural and cocurricular)
5. Recommendations

6. The child's needs and the barriers which thwart them
7. A record of the action taken as a result of the case study
8. Follow-up reports at later periods.

The case study method is used for the study of maladjusted children. The ultimate purpose of compiling the child's case history is to evaluate his present behaviour in terms of his background factors and experiences.

All available information assembled and organized in the case study form is studied. In addition, the child has to be observed in various situations. Interviews are to be held separately with the parents, and with the parents and the child together. Interviews are also held with the child alone and the necessary therapeutic measures applied. The parents, the teacher, the child himself, and the guidance counsellor or specialist need to all work cooperatively for the rehabilitation of a maladjusted child.

PERSONALITY ADJUSTMENT, MALADJUSTMENT, AND DEFENCE MECHANISMS

Human beings, adults and children alike, have a wide variety of needs which are constantly demanding satisfaction. These needs are physical like hunger, sex etc., psychological such as the need for security, status, achievement etc., and social, for instance, the need to love others, need to be in the company of others etc. The physical needs are generated by deficits in the organic structure and chemical balance of the body, the psychological and social needs are either natural drives and urges or are learned. Both types of needs create tension in the individual which leads to action (goal seeking). When an individual is blocked in reaching a goal, he may seek to reach the goal with renewed vigour, adopt a substitute goal (signs of a realistic and well adjusted person), try to reach the original goal by devious means (signs of being an unrealistic and offer person), or withdraw into a world of fantasy (indicating maladjustment).

The greater the extent of harmony prevailing among an individual's drives, motives and ideals, the greater is his adjustment; for example, mutually antagonistic desires like wanting to achieve heroism and to escape death at the battle-front tend to destroy mental equilibrium and so give rise to conflicts and eventual maladjustment. Also, the greater the extent to which a person's wishes and aspirations are attained, the greater is his adjustment; that is the failure to satisfy wishes or reach targets can hamper adjustment. Similarly, if his drive to achieve is fulfilled by being successful in his aim, he would be very well adjusted. Further, the greater the extent to which his desires and actions are in conformity with the demands and standards of his social group, the greater is his adjustment; that is, if every boy is encouraged by his ambitious parents to believe that he can one day become the president of India, many of the boys world be frustrated and face consequent maladjustment. That there is plenty of room at the top is a misstatement of fact. The greater majority must be content with moderate successes and too highly pegged ambitions must not be developed. In other words, inner strivings and motives that permit a person to live at peace with himself and his social group make for adjustment; those that create personal discord and social conflict favour maladjustment.

Some insistent motive disturbs the individual's mental tranquility and sets in motion activities designed to eliminate intervening obstacles and thus permit attainment of the goal essential to the restoration of his psychological equilibrium. A desire for financial security, expressed by the goal of say Rs.5000 a month, will drive the individual to engage in various activities that will enable him to overcome the obstacles in his path. Some possible actions may, for example be, working hard for advancement, marrying a person of immense wealth, or going in for big-business. When the goal is attained, there is a release of tension and a decrease in goal-directed activities. If the motives are simple and the goals were easily achieved, there is no cause

for maladjustment. Unfortunately, the motives are usually complex and often mutually antagonistic. In addition, difficult obstacles of a personal or external nature frequently thwart the attainment of aspirations and desires and result in tearing apart the fabric of adjustment.

Human urges and drives impel activity, the form and direction of which depends upon forces of cooperation and one's intelligence and interests. In the struggle for existence, the individual's primary interest is self preservation and the other desires are secondary. He makes necessary adjustment to preserve himself in a complex environment. Being a social animal, he tries to retain his individuality in, and conformity with, the group, for survival. In doing so, he has sometimes to resort to certain behaviour patterns, which are the mechanics of adjustment, or defence mechanisms, so as to reduce the pressure of the inner drives demanding attention. An inherently good individual, when in competition, may find his progress slow and take short cuts in the form of lying and cheating to excel in achievement of a coveted goal. His imagination works overtime in his attempts to invent ways and means to circumvent rules and regulations of the established group. This is a compensatory behaviour-a common method of attaining a desired goal or purpose. An individual, however, needs to be trained early to appreciate that his compensatory behaviour may be undesirable and may prove to be counter productive.

A normal individual is able to achieve his goals and satisfy his other wants through socially acceptable means. If, however, his individual limitations or the forces of his environment interfere with the normal achievement of his goals, the individual is compelled by the strength of his inner drives to develop socially less desirable and individually less healthful behaviour patterns called defence mechanisms. Some of those mechanisms have been mentioned earlier in this chapter while discussing Freud's personality theory.

Defence mechanisms are balancing devices which may be acceptable in moderation only. They soften failure, preserve inner harmony and permit adaptation. If they are used too often or in excess, they interfere with one's real achievement and make him unsocial and unhappy. They are psychological detours or protective subterfuges and are more or less normal but, if used excessively, they can lead to neuroses or psychoses. As long as they are used for what they are, they serve as shock-absorbers, strategems, retreats, camouflages and are normal, healthy, adjustment mechanisms. They are abnormal, however, if they are confused with reality. Some of these mechanisms are now described.

INTROJECTION

A process by which an individual unconsciously acquires ideas and emotional attitudes and ideals from people around him. Beliefs of parents and teachers regarding morals, education and social values become the beliefs of the young child. The home environment is an important factor that determines the individual's politics. Note your own prejudices-they are likely to be similar to those of your parents or close friends.

COMPENSATION

This is the utilization of extra energy in the development of a trait or traits to alleviate the tensions caused by a real or imagined trait. A short girl attempts to increase her height by wearing extremely high-heeled shoes. A fat boy overexerts himself in order to direct attention away from his size towards his ability to do things and to go about as others can. A cripple offers to help others so as to divert attention from his handicap.

IDENTIFICATION

This is an attempt to identify oneself with a successful individual or a desirable situation. This reduces personal tension through the achievements of other persons in whom the individual is keenly interusted, e.g., imitation of the father's behaviour which

later becomes one's own. The foundation of character development is laid in identification. Books and movies are tailor-made vehicles for identification. Parents frequently identify themselves with their children and regard the achievements and success of their sons and daughters as personal triumphs.

Identification is highly undesirable if, through the use of it, a person so loses his own individuality as to start considering himself to be the person he is identifying with and the one capable of achieving what his hero achieves. It is a mental disorder if identification passes into impersonation. Some psychotic individuals firmly believe that they are Rockefellers, Eisenhowers, Napoleans, etc. This is what happens whenever the use of any defence mechanism is carried to an extreme.

REGRESSION(or Retrogression)

This is the utilization of a mechanism of adjustment that had led to satisfaction during an earlier development period. It is the type of withdrawing behaviour in that the individual retreats to an inferior type of adjustment in order to avoid facing squarely upto present difficulties and to attract others' attention. Childhood is the period of unlimited affection, security and omnipotence, when all attention is centered upon the child and all his whims are satisfied. As he grows older he misses the ready admiration and devoted service and has to compete with others for affection and success. Well integrated and wholesome personalities enjoy the struggle with reality, but when the going gets too tough, the constitutionally less fit amongst us give up the struggle and regress to the sheltered and simple life of infancy. Adult behaviour is suspended, not lost. Habits successful in the past are resorted to only when individuals face new and trying situations in the meeting of which they experience either actual or feared frustrations. An adult caught in a difficulty, caused by a transfer that he does not want, goes to his boss and cries like a child to avoid the transfer.

The fact that the pleasant memory is more lasting than the unpleasant one, makes possible the reversion to the past for the comfort and satisfaction that may seem to be lacking in the present. Displacement. When direct expression of an aroused emotion caused by humiliation at the hands of a friend is inhibited in a person, the emotion is indirectly displaced upon others close to him such as members of his family. A repressed fear of suicide is transferred to a fear of knives, guns or water. As a consequence of this substitution, the original intolerable thought or suicide is kept away from the conscious and at the same time the disguised fear is permitted expression.

IDEALIZATION

For his personal satisfaction, an individual places greater value on something than it is really worth. The individual with whom a young person is in love becomes the most beautiful person in the world. Within desirable limits, idealization is wholesome. Success is achieved, to some extent, by one's faith in his ability to succeed. This gives sufficient confidence to attack the problem of adjustment. To be unable to see one's faults or to admit one's mistakes is a wrong or abnormal application of idealization and may eventually lead to serious emotional disturbance.

SUBLIMATION

This guides the individual into a substitute form of activity to lessen the resultant conflict when his conduct has met with interference. Socially approvable behaviour must be learnt by all. The drives of love and hate are strong and seek satisfaction in behaviour. These must be redirected if we are to live with people around us and respect the laws, customs and moral codes of society. Good emotional adjustment means that the individual can convert his primitive love or hate drives into socially approved behaviour. Psychic energy is then diverted, transformed and transmuted.Pugnacity is sublimated into competition in examination and athletic contests. An unmarried woman interested

in children may give expression to her repressed maternal urges by becoming a nurse. Dante, the famous Italian poet, fell in love with a young girl named Beatrice. Since she was of a high social class, marriage was impossible but this chance encounter with its attendant frustrations served as the basis for several volumes of poetry.

We are aware of much that is inconsistent in our behaviour; yet we dislike to resolve our conflicts, harmonize our disagreements or put our thinking in order. We prefer to use the easier method of rationalization, projection or any other defence mechanism. With the help of reasoning which is often false, illogical though self-satisfying, we proceed to find arguments to justify our behaviour regardless of the social values. That is why it is difficult to obtain from young wrongdoers any straightforward reasons for their misdeeds.

Life presents many difficulties and conflicts. These should be resolved as far as possible by meeting them and not through seeking false escapes or defence mechanisms. The teacher should help the growing youth to develop tension tolerance and the ability to face difficulties realistically.

Feelings and emotions are the great moving forces in human life. They are the mainspring of man's mental development and achievement and also the source of his mental ills. Human problems, mental conflicts all stem from the emotional life of man. Emotional disturbances make for both good and evil. While many children are oppressed and overwhelmed by such disturbances, many others find them a healthy stimulus and a means for growth. The teachers who influence the child's emotional development should help him to become emotionally mature so that emotions do not cause or exaggerate his problems and conflicts which are an inescapable part of life. Besides, they should assist the pupils to set for themselves realistic goals which can be achieved.

Excessive frustration or habitual and exaggerated use of defence mechanisms may reduce an individual's social effectiveness and his personal happiness. Extreme and prolonged frustration can also lead to neurotic and psychotic behaviour. It is, therefore, necessary that both 'parents and teachers help children to cushion, not remove, the latter's difficulties and prevent the onset of frustration.

CHAPTER VII
LEARNING

Learning is a form of growth or change in a person, which is manifested as new modes or patterns of behaviour. This change shows itself as a skill, a habit, an attitude, an understanding, or as knowledge or an appreciation. At any rate, the person is not the same as he was before the learning. The changes which result from learning are positive and active, not negative and inert.

The child is born with the potential to mature and at successive age levels, grasp and learn the language, ways of behaving, attitudes, and values of his culture. He is born also with the potential for reorganizing and remoulding many aspects of his culture in harmony with changing conditions and needs. Thus, the child is a product of culture, as much as he is of biology. Over the years, it is the biological man who has developed the culture into which the child is born.

Many individuals and institutions contribute to teach the child the cultural patterns of his social group. Through maturation and learning, the child acquires a culture. The process whereby the child is taught the cultural ways that society expects him to follow is termed as enculturation. In this process, the child adjusts his innate biological characteristics to the prevailing cultural practices in the society. Through the processes of education, he is moulded to fit into a particular culture and to function effectively as a member of that culture (Garrison, et al., 1967).

NATURE AND CONCEPT OF LEARNING

Learning how to swim or ride a bicycle is called habit learning, while learning how an engine works or how an arithmetical problem is solved is termed as true learning. The nature of learning began with the relatively simple learning processes of animals and the laws or rules derived from animal

learning were later found applicable to human learning illustrating that man belongs to the animal biological group. At one time, two views or schools of thought existed. Thorndike's view emphasized habit learning, because he maintained that intelligence does not enter into the learning of animals lower than the higher apes. The second view was that of gestalt learning which emphasizes true learning, saying that an element of 'insight' or 'seeing how' - is apparent in animal learning even at a comparatively low level.

Learning involves new ways of doing things. It operates in the individual's attempts to overcome obstacles or to adjust to new situations. It represents a progressive change in behaviour as the individual reacts to a situation in an effort to adapt his behaviour effectively to the demands made upon him. It enables him to satisfy certain interests or to attain certain goals.

Learning is vertical when precision in performance is increased or when information is added to what has been already learned and horizontal when what is learned is integrated and organized as a part of a functioning unit of expanding experience. As an individual goes about his daily activities, he unconsciously acquires many changed modes of thought and behaviour that grow out of his experiences. These may exercise a powerful influence upon his conduct and his relations with people around him. Learning, therefore, means change in response or behaviour including emotional behaviour, it means the acquisition of knowledge or motor skills. The change may be in the kind of person he is, or in what he knows, or in what he can do. This means that he may, after learning, be happier; he may know better how to look after his health; he may be able to speak or work more effectively, to play a musical instrument, or to perform a surgical operation.

There are various types of abstract learning. These include memorizing learning material with little or no understanding of

its meaning (formulae or equations, for example), learning simple concepts like addition or subtraction, discovering and understanding relationships involving responses that are logical and psychologically sound.

Learning is accomplished when the learned content can be repeated verbatim, i.e., rote learning, or when the ideas gained from the studied material can be expressed in the learner's own words. Rote learning means that as a result of study the learner can reproduce the material once correctly. The more often he reproduces the material the more likely will he be able to remember it. Such additional repetition or study is called overlearning. The second method of achieving learning involves an analysis and comparison of ideas that will cause new material to become meaningful to the learner. As the ideas are understood, they can be integrated into a workable pattern.

The explanations of learning in terms of the nervous system are as follows: learning implies (a) forming connections or "bonds" in the nervous system as a result of responses to stimuli, (b) decreasing resistance at the synaptic gaps, and (c) establishing preferential pathways in the nervous system. All these statements suggest that learning is an aspect of one part of the organism. A more convincing view, perhaps, is that learning is an aspect of the behaviour of the total organism, which means that handwriting skill, or typing skill is not localized in the hand but involves the total organism.

THEORIES OF LEARNING

Association psychology was the first to explain learning in terms of stimulus (S) and response (R) units. It easy to say that S leads to R. The sight of the mother, a stimulus (S) leads to the response 'Mamma' (R), because the word 'mamma' gets associated with the sight of the mother. But how the original association first took place is rather perplexing. There is no natural connection

between the sight of the mother and the name (mamma). How two things become associated in experience has been a challenge from the earliest times. Aristotle responded to this by propounding the four laws of association, the essence of which is that in order to become associated, the two

Things must be experienced together. Of the two things experienced together, if one is recalled, recognized or seen, the other inevitably comes to mind. This happens when the two things are similar to each other in some way (law of similarity), are entirely unlike each other (law of contrast), occur at one and the same time (law of continguity in time), and occur at one and the same place (law of continguity in space). These laws happen to hold true in almost every case, but they do not explain how the mechanism of association works nor do they explain why experiences sometimes fail to produce associations. The problem is not yet solved but Pavlov and his associates in Russia and Watson in the U.S.A. threw some light on it through their theories of learning, which illustrate the how and the why of learning.

CONDITIONED REFLEX (CR) OR CLASSKAL CONDITIONING THEORY

Pavlov's experiment on a dog illustrates how learning takes place through conditioning which is nothing but association brought about by deliberate action. If a dog is given a piece of meat (S), one of the natural responses is an increased flow of saliva (R) from its salivary glands. Now if a bell is rung every time before the dog is given the meat (S), the ringing of the bell eventually becomes an adequate stimulus for salivation (conditioned response-CR), so that the sound of the bell (CS) even in the absence of the meat will induce the flow of saliva (CR). This connection between the receptors for sound and effectors for salivation is not a natural one. It is a conditioned reaction-the salivary reflex is conditioned. This is how conditioned response or reflex occurs: S - R, S + CS -> R, CS -3 CR, CS - R. The dog

has learned a new response through conditioning. This arbitrary, artificial response is called a conditioned reflex. The unconditioned responses are natural, permanent, regular and are due to the natural growth of inherited tendencies of the nervous system. Conditioned reflexes are temporary, individual, learned forms of behaviour formed due to connections of the nervous system acquired during an individual's life time. For a conditioned reflex to be formed, the natural reflex is substituted, associated, or transferred, to an S which is biologically adequate to produce that response. The stimulation of any receptor associating simultaneously with the reaction of an effector leads to the formation of a new S. In other words, learning has taken place but it is to be remembered that learning is always built, as it were, on the foundations of an existing natural response.

Watson performed an experiment on conditioning of an emotional (fear) response in an 11-month old child, to a white rat. The rat was left near the child. Every time the child tried to touch it, a loud, frightening noise was produced, so that the child ultimately shunned the rat. The fear of the loud noise thus became identified with fear of the rat. A new fear has been learned, in this situation, through conditioning. The fear response gets transferred to fur coats, cotton, wool etc. The conditioned fear lasts throughout the child's life unless someone unconditions it. If every time the child goes near the rat you give him a chocolate, the time would come when he would eat with one hand and play with the rat with the other. The emotional response of fear then stands unconditioned. Proffering food that is liked is a very potent factor in the process. Similarly, if the dog of Pavlov's experiment is fed before the bell is rung, no conditioned reflex is formed; or if an unconditioned stimulus (food) precedes the conditioned stimulus (ringing of the bell), no new reflex is formed. Most of us are so conditioned to the taste of chocolate that even by holding a chocolate at arm's length we increase the flow of saliva.

EDUCATIONAL IMPLICATIONS OF CR

1. Relearning is easier than learning. To maintain the strength of a CR, a regular and repeated reinforcement by the unconditioned S is needed.
2. CR is highly specified-this has an important bearing on the transfer of training.
3. Law of summation-two conditions mate the response more powerful.
4. CR may be extinguished through disuse-you cannot fool the dog all the time (i.e., if food does not follow the ring several times). Educationally, nagging directions like 'sit up', 'don't touch', 'read the book' by parents soon lose their efficacy as the children become immune to them.
5. CR is more rapidly established in the young.

CR has wide applications in human learning. A burnt child learns to dread the fire. The experience is so painful that only one experience is enough. How do children learn the names of things? Sight of ball or chair becomes associated with its name in the child's mind when others name the object. Later, when the child sees that object, he calls it by its name. An army officer suffered from claustrophobia as a result of daily living (at the time he was just five) in a confined space where there was nobody except a barking dog. This happened because the fear of the barking dog, which was tied in that narrow space, got so much associated with that space that it turned into the fear for narrow and secluded places. Similarly, all forms of learning may be brought within the CR formula. This conditioning process leads us to Thorndike's law of Exercise (or use)-several repetitions are required for establishing a new bond-and also the law of disuse (or forgetting)-if CR is not exercised for long, its strength is impaired; this means that association between objects must be kept alive to sustain learning. Very soon after birth the unconditioned bonds of children become conditioned and the new bonds called habits or learning emerge.

Individual differences with regard to intellectual ability and emotional stability are largely due to the ease with which CRs are formed and broken. In well-endowed children, these associations are easily made and remade. In the feeble-minded they arc difficult both to form and to break-the normal and the subnormal retain a plastic condition of the nervous system. Finally, children and adults are usually unaware of the stimulus to which they become conditioned. So CR is a great triumph and it has played a prominent part in the whole field of learning and motivation.

THEORY OF TRIAL AND ERROR

This theory emerged as a result of experiments on animal learning. Experimenting on animals is easier than on human beings; animal behaviour being less varied and less complex, the animal lends itself more easily to experimental control. Thus, psychology is indebted to animals for its laws of learning, for the enunciation of conditioning as a basic principle of learning. The fact that most of the formulations on learning in animals are applicable to human learning is a convincing proof that man belongs to the animal biological group.

Mobius (1873) trained a pike (a fish) to desist from snapping at minnows by causing it to live in a tank separated from the minnows by a glass plate. The pike stubbed its nose against the plate every time it tried to get at the minnows. Its original nature was gradually reversed so that it refrained from snapping at them even when the glass plate was removed. The fish had learned a new response through trial and error (T and E).

Thorndike, after seven or eight trials in a similar experiment on pike, as illustrated in Fig. 3.la, found that the fish swims into the glass screen less and less, swims up and down along it fewer times, stays still against it less frequently until finally, its only act is to go to the right hand side, rise up and swim out towards the minnows. It profits by the experience. After some more trials, the

pike took even less time to reach the minnows, to satisfy its hunger. Thus, the pike modified its conduct to suit a situation for which its innate nervous equipment did not provide and learned to go out. This is learning through T and E where the wrong reactions, i.e., those which did not lead to the satisfaction of hunger, were gradually eliminated and the right ones were stamped in.

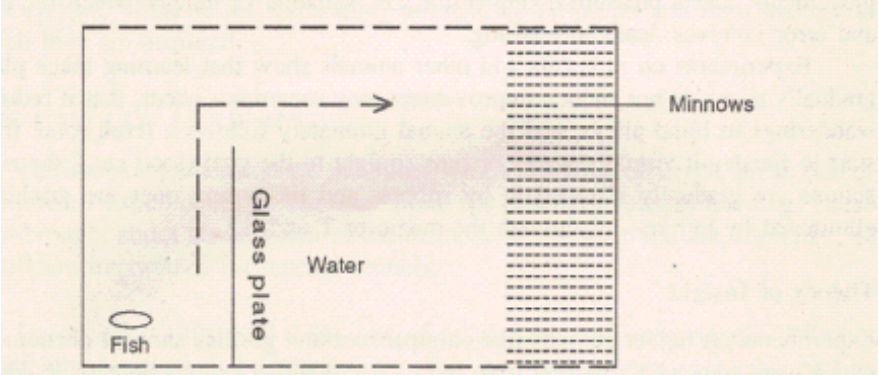


Fig. 3.1a Diagrammatic representation of learning through trial and error.

Yerkes, in a similar experiment on turtles, using their tendency to hide as a motive, taught a turtle to find its way home through a simple maze. The turtle gradually reduced the time by eliminating unnecessary wandering, and learnt to follow a path leading straight to its destination (Fig. 3. ib).

Sockets studied the Canadian porcupine, a fearless animal which is easily trained. It normally takes food which is offered to it, with its mouth, but this habit may be modified through trial and error exercises, so that the same animal now seizes and carries the food to its mouth with its paws. The experiment involves beating it every time it used the old habit, so that out of sheer desperation the animal, now hungry, uses its front paws to hold a morsel of food and drop it into its mouth. It is not punished when it does so and at the same time this habit, which is not usual, satisfies its hunger. It thus learns a new habit through T and E.

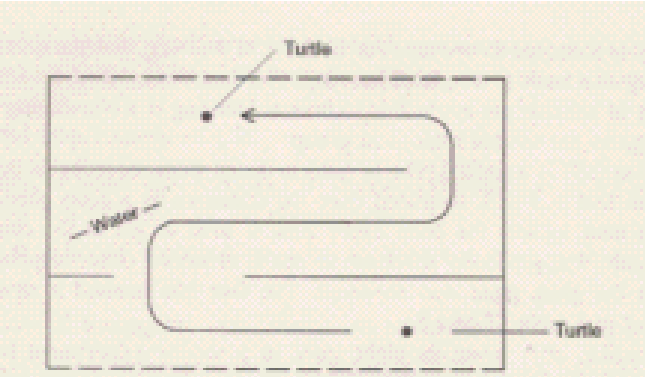


Fig. 3.1b Learning through trial and error.

Animals were found to have more intelligence, as assessed on the basis of their capacity to learn, than they are usually given credit for.

Hungry rats left in mazes, exposed to the food stimulus outside the mazes but within their sight, are motivated to run to and fro in a bid to open the latch to come out and reach the food. Every trial leads to learning, trial-error records improve and are found to be superior. Motivation in the form of pangs of hunger, repetition of movements, and a pleasure-giving result, i.e., satiation of hunger which the trial and error involves, leads to learning.

Experiments on rats, cats and other animals show that learning takes place gradually as a rule but sudden improvement may sometimes occur, that it reduces wanderings to blind alleys, and the animal ultimately follows a fixed route from start to finish-it virtually walks or runs straight to the goal (food etc.), the right actions are gradually stamped in by success and the wrong ones are gradually eliminated by failure-all through the magic of T and E.

THEORY OF INSIGHT

Experiments on higher animals like chimpanzees and gorillas showed phenomena which were somewhat different from those of

trial and error experiments. Kohler's studies on a chimpanzee, left near banana trees with some poles and sticks lying about, showed that the animal placed a pole upright on the ground, swarmed up the banana tree quickly and plucked the bananas before the pole fell to the ground. The chimpanzee was said to have learned to preform the feat by insight but insight is not the whole explanation.

All experiments show that learning is a gradual process. The wrong responses are gradually eliminated and the right ones organized into new wholes which become more and more efficient until a practical limit is reached. This type of learning is miscalled T and E learning. It should, in fact, be called learning by selection of the successful variant. The wrong variant is usually eliminated because it cannot exist in the presence of the right one. This is not confined to animals and is prevalent in human learning also. To play golf, to ride, use a type writer, drive a car, to spell or compute-all these have trial and error learning as an essential element.

Kohler's chimpanzee showed only insight but insight is here another name for the T and E learning which actually dominates. A person solving puzzles tends to follow 'hunches' which sometimes provide sudden and immediate solutions. That is why we call this insight but, here too, T and E dominates. In fact, T and E is not confined to motor acts only. In geometrical deductions, thinking is largely of the same T and E kind; we think of one deduction and when it does not seem to verify the proposition, we reject it, think of another, and this mental process goes on until we think of the one which we need.

Insight in Kohier's sense, is only rapid learning and is generally confined to the simpler problems. Where no improvement appears in the curve (if we draw one to show our score for every trial), it does not mean that there is no improvement, it may have

taken place, but be hidden as inner coordinations of the nervous system. The chimpanzee which cannot do some thing and then suddenly does it may have been learning by inner coordinations which do not show on any curve of learning. A man thinking out a problem suddenly says, "Ah! I have got it." Insight, it may seem, has led to learning but insight in this case is the end product of a lot of T and E thinking. Insight is, therefore, an unanalysed form of learning and one in which T and E plays a hidden, though important part. The peculiarity in man as distinct from animals is that man is able to utilize both implicit and explicit language habits. He is not exactly the superior of some of the lower animals in the use of non-language habits. Habits which are possible to the idiot and the imbecile are remarkably animal-like in the hit and miss manner in which they are acquired.

THE LAWS OF LEARNING

The earliest comprehension of the rules which learning observed grew out of Thorndike's experiments on learning. These are called the laws of learning. These laws brought about a revolution in the methods of teaching and are, therefore, of significant importance for teacher trainees.

The law of effect (also called the law of satisfaction and annoyance). When a modifiable connection between a situation and a response is made, and is accompanied or followed by a satisfying state of affairs, the strength of the connection is increased. Conversely, it is reduced if the outcome is not satisfactory. Some bonds like breathing, snoring, digesting are non-modifiable, while sneezing, yawning, vomiting are difficult to modify. We are here concerned with bonds which can be modified with ease. To eat when hungry, to rest when tired, to prefer cats to snakes, sunlight to darkness, praise and approval to blame and disapproval, are all satisfying. Going hungry, being scorned to have to eat when satiated are original annoyers. The secret of why some actions are satisfying and others annoying lies in

evolution. The whole gamut of satisfiers and annoyers from sex to starvation can be explained by considering that the pleasant satisfiers are the ones that led to survival and perpetuation of the species and original annoyers those that led to its extinction.

Watson disagrees with the law of effect on the ground that this law does not play any part in learning which, according to him, is explained by frequency and recency. Whatever has been recently studied and whatever has been repeatedly studied are easily learned. Thompson, however, demonstrated the law of effect in human as well as in animal learning. For animals, as illustrated in Thorndike's experiments on trial and error, food was the original satisfier, confinement coupled with hunger was sufficient stimulus for the cat to cause it to try for coming out. In the home and school, original satisfiers and annoyers are constantly used. Praise is satisfying while blame is annoying and hence their universal use in teaching. Some activities, provide, as it were, their own repertory of annoyers and satisfiers. In playing a musical instrument, dissonance is annoying, consonance pleasurable as it is in typewriting, skating and cycling.

If the law of effect is not correctly used, wrong bonds may be quite easily formed. A spoiled child is the result of the rewarding of wrong attitudes. Being the centre of attention is pleasurable for children and some of them learn to throw tantrums in order to get attention. If the teacher uses school tasks as a punishment, he associates school work with punishment and annoyance. If teachers and parents, while punishing or dealing with children, only ask themselves, 'What am I encouraging or discouraging, what bonds am I strengthening or weakening by this particular line of conduct', there would be a far larger number of happy children than there is tothy. Both parents and teachers need to think out the psychological outcome of any line of action they propose to take with regard to children.

THE LAW OF EXERCISE OR FREQUENCY

When a modifiable connection is made, that connection's strength is, other things being equal, increased. When such connection is not made, its strength is decreased. This law is also called the law of use and disuse. Practice makes a man perfect but not if the result is painful. Nobody ever becomes perfect at sitting on a pin or on poking a fire with the fingers. Closely associated with this law are the laws of intensity and recency. Bright lights, loud noises or concentrated effort, thunder and lightning, make profound imp' on children. Interest in a task makes it easier. Recency is nothing but avoidance of disuse. In terms of the nervous system, this law refers to the strengthening and weakening of synaptic connections. The repeated passage of a nervous impulse across a synapse breaks down the resistance. Use cements the bonds of the nervous system while disuse weakens them.

The law of effect and the law of exercise work hand in hand. We practise things we are successful at. Distance lends enchantment to the view. Every nation has its golden age. Satisfying things are remembered, annoying ones are forgotten because we dwell more on the pleasant than the unpleasant.

THE LAW OF READINESS

When a bond is ready to act, to act gives satisfaction and not to act produces annoyance, and conversely, when it is not ready to act, to act leads to annoyance. Readiness is associated with the condition of the neurons of the nervous system. Sometimes these neurons are ready to act and sometimes they are not. To have to do things when fatigued is most annoying, yet even a strenuous action after a good rest is distinctly satisfying. The boy who is bursting to display his knowledge is pleased if allowed to do so, and annoyed it he is ignored.

Thorndike's secondary laws of learning which extend and amplify his three primary laws of learning (Crow and Crow, 1964, p. 230) are given below:

1. Multiple response to the same external situation: There may be more than one response to the dinner table laid with sumptuous food.
2. Attitude, set or disposition: A well-fed cat sleeps in a cage and makes no effort to come out.
3. Law of partial activity: A pupil who has solved a number of puzzles gets on to the thing more actively than one who has not had similar experiences.
4. Law of assimilation or analogy: Situations having no original or acquired responses may evoke responses made previously to similar situations.
5. Law of associative shifting: similar to conditioning, the teacher can get any response of which a pupil is capable with regard to any situations to which he is sensitive.

LEARNING OF CONCEPTS, APTITUDES AND SKILLS

The school imparts cognitive learning: all academic subjects involve concepts and generalizations. Concepts develop the pupils' thinking. Learning units composed of concepts which are related to, and grow out of, the concepts already familiar to the child are prepared. Then only the new concepts become meaningful. If the concepts are accompanied by meaningful experience, they are learned more effectively. Associate a concept with real experience, proceed from simpler to more complex concepts, let the child express the learned concept in one form or another, are the other steps that a teacher should take to teach concepts. The concept of an aeroplane can be learned if its picture is drawn by the child, better if its model is prepared, still better if it is described in words, and best of all if an aeroplane is actually shown to the child.

Generalizations can be learned either through induction-proceeding from particular instances to general rules; or through deduction-moving from the general principle to particular instances implying that principle. The pupils should be encouraged to discover for themselves the evidence for a principle explaining certain facts.

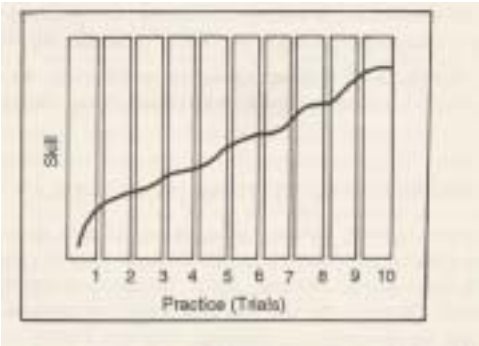
Attitudes are learned in the process of development of the feeling of belonging to a group. After a child identifies himself with a group, he starts adopting the attitudes of that group. A pupil in a convent school, for instance, develops a specific attitude towards her dress. Values are related to attitudes. Values that are accepted by parents, teachers and close friends are acquired by children. Group norms play their is role here also.

SKILLS INVOLVE SOME KIND OF PERFORMANCE

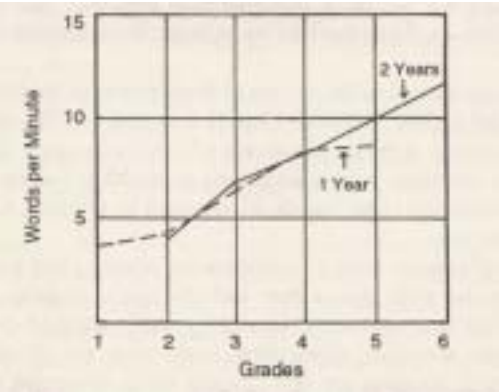
After a child has learned a skill, he performs the act with greater ease and efficiency. A good typist types with less effort, in less time and more accurately. Skills are both physical and non physical. Athletic activities, typewriting, craft work are physical skills, while reading, dramatics, speaking are non-physical skills. Important steps involved in the learning of skills are, demonstration (by teachers), experimentation (self- effort by learner), feedback (learner knowing the result of his learning), and practice (by the learner). No skill can be learned without undergoing these stages (Kuppuswami, 1965).

LEARNING CURVE

The problem of improvement in learning has been experimentally studied and the results have invariably shown wide individual differences in the rate of improvement. This is true in the acquirement of both knowledge and skill. The learning curve has been found to be extremely irregular, varying even in the same individual. The rate of learning is sometimes fast and sometimes slow.



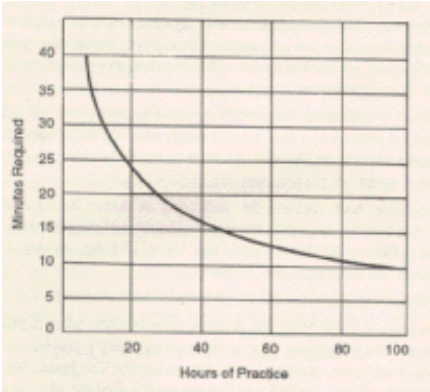
The interest, attention, quality of teaching, the amount of learning previously acquired, spacing of practice periods, age, hereditary equipment of the learner, fatigue and a host of other factors influence this fact and make the rate of improvement vadable. Some of these factors are difficult to control. Most of the studies have been done on telegraphy, typewriting or on animals. The improvement in typewriting skill is shown in figure.



Even a casual inspection of the learning curve shows that concentration may explain these figures, but it is very probable that they represent actual differences in the hereditary equipment of different individuals;

2. The progress is irregular for every pupil;
3. A long break in learning causes severe losses in ability, which, however, are always made up more quickly than the rate at which they are gained in the first instance. Relearning is always easier;
4. The rate of increase in improvement is greater at the beginning than at the end and may be explained by the law of diminishing returns;
5. Each individual goes through periods when little or no improvement is made. These are called plateaus. In a practice curve (Fig. 3.4), there are initial periods of rapid progress, followed by plateaus, followed again by rapid progress, plateaus and so on. Each item of information makes the acquisition of other items easier. Learning one fact may

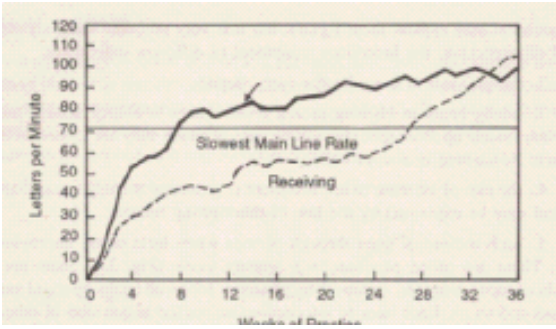
involve knowledge of a score of new facts in the shape of its relation to the facts previously learned. So knowledge may be said to be like a snowball.



PLATEAUS

Bryan and Harter studied plateaus (Fig. 3.5) on telegraphy, a subject which calls for many months of practice before even a moderate degree of skill is acquired. Telegraphy is not a simple habit, but a hierarchy of habits, the latter and more complex habits being built upon the earlier and simpler ones in the sequence- letter habit, word habit, phrase habit. Plateaus may result from one or more of the following:

1. When a plateau appears, it indicates that a higher form of habit is being attempted before the lower ones on which it is based are perfected. As soon as these lower habits have been perfected, another upward flight of progress is made. A plateau is, therefore, a period of learning when lower habits of a hierarchy, as yet imperfectly learned, are made automatic. The freedom so obtained eventually permits of progress to a higher plane.



2. Book, a researcher, suggested boredom as the reason for plateaus. When the first flush of interest in a new subject disappears, a plateau appears because the task has become boring or irksome. As soon as interest reappears, the curve moves upwards once again.

3. Probably both factors, the perfecting of lower habits and flagging of interest are responsible. Whatever the true explanation of plateaus may be, whenever they appear, effort is needed to rise from them. Skating, writing habits, simple arithmetic-all are similar in this respect.

The following steps can be taken to overcome plateaus:

1. A physiological limit has perhaps been reached when a plateau emerges but there is no limit to learning. One could learn anything if one had the opportunity. Most of our powers are exercised on a comparatively low level. We are endowed with so many hereditary capabilities that we cannot find the time to develop more than a small fraction of them.

2. The general manager of a bank is paid highly for his services, but he is probably not much more expert in banking matters than the average clerk. Thus any average person can, with the necessary effort and zeal, rise to the top in spite of checks and hindrances here and there.

3. Greater effort is the price to be paid for success.
4. A nervous discharge tends to take the path that it has taken before and hence we find our hereditary and habitual patterns standing in the way of new learning. The will to learn and to rise above our usual patterns is obviously necessary
5. Short and numerous pauses in long continuous work are more effective than long and fewer pauses.
6. Practice periods should be so arranged that the newly formed bonds are exercised again before they have time to fade

materially. Striking the bar in type writing is over-learned in comparison with other movements as also are the strokes in swimming and skating. Some bonds are overlearned and overexercised while others are underexercised and so fade out for lack of practice.

METHODS OF LEARNING

The methods generally used by learners are the whole method and the part method. The whole method is actually better though the part method is more popular. For learning nonsense syllables, the part method is better, but for learning poetry the whole method is more effective. The two methods may be compared as follows:

1. In learning a poem by the part method, the last word of the first stanza is connected with the first word of the same stanza instead of with the first word of the next stanza, so that when required to reproduce the whole poem by heart one is stuck after the first stanza until reminded of the first word of the second stanza. In the whole method, the last word of the first stanza naturally gets connected with the first word of the next stanza and so on, thus keeping the continuity of the poem alive in the learner's mind.
2. Learning by wholes enables the subject to gather the broad outline of the meaning, to see the relationships between one part and the next part in their proper sequences.
3. Attention is more concentrated in learning by wholes and the wholes are better remembered provided they are not unnecessarily large. Thus, the whole method enables the learner to remember the material for a longer time. That the whole method is better than the part method and that the longer the material, the greater the economy of learning in the whole method is shown in Table 3.1 below:

Lines of Poem	No. of readings required to remember to part method	No. of readings required to rem. to whole method
20	15	13
30	26	23
40	37	32
50	48	42
60	79	61
120	162	130
240	402	290

In memorizing music, some musicians adopt one method and some the other depending upon the length and kind of the material to be memorized.

In learning golf, cricket, basketball and other motor acts, the part method may necessarily be followed, although the grasp of the meaningful whole may help in the learning of each part. For children the part method is preferable so that a flush of encouragement ensues after the mastering of each part and this stimulates further effort.

If the material to be learnt is not homogeneous, one part may be more difficult than another thus necessitating a large number of extra repetitions of the whole in order to commit the difficult parts to memory. This lack in the homogeneity of the material to be learnt led to the mixed method also called Gopalaswami's pmgressive method. Here, if a poem is to be learned, the first stanza is memorized by the part method, the second stanza is also learned by the same method, and then the two stanzas are memorized together. The third stanza is then memorized again by the part method, followed by remembering the three stanzas together and so on, until the whole poem is learnt by heart. The mixed method gives benefits of the whole method and obviates the pitfalls of the part method.

It is, however, unarguably true that whatever be the method, it facilitates learning if it is accompanied by the will to learn. Indolent learning is a waste of time. Ten minutes' concentration is far more beneficial than ten hours' idling in supposed learning. Lax attention means poor results and little attention. Dictating to a second party may not help us remember a word of what we are dictating, as the intention to remember is absent. Interest in the material to be learned is a considerable aid to efficiency in learning.

FACTORS INFLUENCING LEARNING

Factors, other than those considered in the theories and methods of learning, which are involved in the economy of learning are summarized below

AGE

You cannot teach an old dog new tricks. Youth is a golden period for learning. This is the time when habits are permanently fixed. The preferential paths of the nervous system formed in plastic childhood are so well established by the time middle age is reached that they seriously interfere with any new form of learning. This does not, however, mean that one cannot learn later on in life. New bonds can be formed later in life, only more time and effort need to be devoted to their establishment.

ATTENTIVENESS, CONCENTRATION, ZEAL

The attentive listener is tense, he shuts out all distractions. It is well known that we can learn to adapt to distractions like sounds, pressure of clothing and spectacles quite easily, but not so easily to persons. What is not so well known is that distractions, provided they are not strong enough to produce an emotional disturbance, may actually aid learning.

PHYSIOLOGICAL CONDITIONS

Hunger, thirst, fatigue, vitiated air, sickness and the like probably affect the rate of learning adversely, but our knowledge about them is distinctly limited. Some drugs, like morphine,

nicotine, and alcohol, seem to be detrimental to learning; some, like caffeine and strychnine, seem to facilitate it; but the results of different experiments are not always in agreement-owing to the possible introduction of an emotional factor of unknown potency.

LIFE BENTS AND DISPOSITIONS

A good start in a school subject by a skillful and enthusiastic teacher often disposes the child to like it for the rest of his life. An unsympathetic teacher with warped views on child life often creates a distaste for his subject or even for schooling as a whole, which lasts throughout childhood and frequently for life.

KNOWLEDGE OF SUCCESS AND FAILURE

Knowledge of success stimulates the relevant promising bonds. Success also favours repetition. Everybody likes to be successful and thus we practise the things we do well or we are successful at.

SIGNIFICANCE OF THE TASK

Project and problem methods, which create desirable attitudes in the pupils are very helpful for progress. These attitudes in turn make the task significant and the pupil enthusiastic to go ahead.

ABSENCE OF WORRY AND IRRELEVANT EMOTIONAL EXCITEMENT

This lets the child work and learn at his own pace, although a slightly heightened emotional state relevant to the situation, which comes from a knowledge of increasing mastery, probably enhances the learning rate. This is often illustrated by the spurt near the end.

TRANSFER OF LEARNING; THEORIES AND EDUCATIONAL IMPLICATIONS

Transfer of learning is implied when a person has some advantage in a learning situation because of some kindred learning previously acquired. A person who has practised heavy muscular exercises will be strong enough to lift or handle any kind of material. This advantage s to all materials that may be lifted. Plato thought that the mind consisted of powers or faculties, such as reason and memory, which could be strengthened by sheer exercise just like muscles. That view, known as the formal discipline theory or the faculty-discipline theory held that reason or memory once trained by any material whatsoever, would be put to use in any situation involving reasoning and remembering. Experimental evidence has, however, not supported this theory.

The universal belief that training or improvement in one form of physical or mental activities is transferred is now waning. That all children should learn Latin is no longer considered desirable. Latest researches say that this view was mistaken.

Dribbling and dodging are common to both football and hockey. So one who knows how to play football will learn to play hockey sooner than one who does not know any of these two games. Verb forms, principles of grammar, translation and composition, characteristics of Latin are common to most other languages and hence its transfer value for English and other language subjects. Thus, transfer from one subject or one skill to another subject or skill is present if common elements exist. This is the theory of identical elements.

Geography helps histoiy because maps are common to both. Addition improves multiplication because the latter is largely addition. French helps German because methods to look up the dictionary are common to both. Writing and spelling are common to all subjects and hence their transfer value. Latin, owing to the

mental exercise it involves, may develop intelligence which may, in turn, assist in learning other things but to assume that there is transfer of knowledge from Latin to other subjects may not be correct.

The transfer of attitude in the sense that neatness in arithmetic leads to tidiness in other subjects is possible. Similarly, mastery and confidence in one subject may lead to mastery and confidence in other subjects.

It is better to practise the very activity which we wish to learn even if this activity has elements common to the one which we have already learnt, because the common elements between the two do no more than help us to accelerate the speed at which we pick up the new activity. Mastery of the new activity chiefly depends on exercise and other factors conducive to learning. Pupils who have the most experience to begin with gain the most during the year, whatever the subject or skill may be, because new knowledge is generally built upon the foundations already laid, and the teacher who is able to link the new with the old could work wonders in the matter of helping pupils in transfer of learning. Another view that explains the how and why of transfer is the theory of generalization of experience. Trained intelligence is peculiar in its content but general in its method. A study of scientific methods powerfully reinforces the general concept of organization. Identical elements in this generalization may be the specific habits of language engendered by the process. Language is, the best medium by which knowledge can be transferred from one situation to another. Language need not always be vocal, the sub-vocal variety used in thinking is just as effective. Every new problem must be turned into the form of an old problem the situation of which is already known otherwise, it cannot be solved. The new must be interpreted in terms of the old.

As all theories agree that transfer takes place, teachers must know its implications for education. They should:

1. Teach so that overlearning occurs. The greater the repetition of material taught, the more successful the transfer;
2. Give examples of the use of taught material in other subjects and in everythy life;
3. Foster transfer through assignments, discussions and quizzes;
4. Relate the material taught to the things which the learner already knows;
5. Provide meaningful, organized, well structured, and well illustrated material;
6. Urge students to transfer principles and generalizations. The students will then transfer not only specific content but study methods as well;
7. When teaching abstract material, provide advance organizers-vivid introductory work-so that the students find meaning and structure in it;
8. Make the classroom situation similar to the transfer situation. While teaching reading, teach the letters and words which have the same form that learners will see in their readers;
9. Specify what is important in the task. Pupils frequently confuse b with d, so stress the distinction and give them considerable practice with words containing these letters;
10. Try to understand how the learner perceives the possibility of transfer. You would then present the material quite differently, capitalise more on the learners' background and offer more practical possibilities of transfer.

MEMORY, FORGETTING

There are two distinct kinds of memory: (a) the sort that consists of habit-in learning a lesson by heart, we are said to know it when we can remember it; (b) independent recollection-by recalling what we had for breakfast this morning; this is the recollection of a unique event and cannot be explained by habit.

According to the dominant types of images used in remembering, there are visiles, audiles, olfactives, gustatives, and tactiles. For example, the person whose mental imagery is auditory rather than visual is an audile.

Here we are only concerned with memory as a habit. The factors which influence the memory function are as follows:

I. Repetition keeps associations alive while disuse weakens them. It is on this principle of use that drill in the classroom is based.
2. Vividness helps memory because attention is directed to an experience in proportion to its vividness. The reason why children learn more quickly and more permanently from one teacher than from another is the vividness of the presentation of a lesson by the former. Vividness is a relative term. In order to present mountains as being high we must present the contrast of deep valleys.
3. Recency of learning aids memory of the material. Changes made in the nervous system gradually disappear. The teachers must review their work because children forget so easily.
4. Resultant satisfaction encourages further learning.
5. Interest and effort always aid learning and memory.

We learn to skate in summer and swim in winter-this shows the necessity for incubation periods in learning. Having learnt swimming in summer, the winter, when no swimming is done, serves as a period of consolidation of the skill. Numerous psychophysical difficulties, interfering associations, bad habits of attention, useless bonds fade out with the lapse of time. But Thorndike does not admit this argument as it is contrary to the laws of use and disuse.

FORGETTING

The rate of forgetting-dancing, skating, swimming, bicycling, riding once learned are so permanent, while languages, history,

and knowledge in general are so fugitive. The reasons are the following:

In the former, certain native connections are largely drawn upon. The motions of swimming, dancing and skating are not too far removed from the movements that are perfectly normal to all of us. Secondly, each movement is overlearned to an enormous extent. In the latter, language and all knowledge have to be acquired to a much greater degree and there is much less native basis. The multiplicity of bonds in language activities precludes the overlearning of any of them. The author found that alter a lapse of fifteen years he did not have any difficulty in relearning cycling, but Persian seems to have almost disappeared after about seven years of disuse.

Experimental evidence on the rate of forgetting shows that poetry is retained longer than nonsense syllables. Once learned, nothing is ever completely forgotten- traces remain which, even after a very long interval, facilitate relearning. Forgetting is extremely rapid in the earlier phases, after which the loss though steady is comparatively light. We seem to forget one-half of what we have learned in the first half hour, 60 per cent of it in the next eight hours, and 80 per cent of it in a month. Teachers should, therefore, review the material which has been memorized very soon after learning, preferably at the end of the same day, and certainly not later than the next day. In fact, the revision or recapitulation of the lesson taught should be inbuilt in a lesson plan, as it usually is.

The amount remembered depends upon the way the material is memorized. The losses in manual habits are much less than in verbal ones. Slow and sure is good for memory. Those who learn quickly remember the longest when the material is logical in character. On the whole, facility in learning and tenacity in retention are positively correlated. Intelligence tests also confirm

this finding. James' contention that no amount of culture would seem capable of modifying a man's general retentiveness has withstood the shocks of experimentation to a remarkable degree. The methods employed in memorization may be improved, but, at bottom, nature has the final say, and the positive correlation between retention and speed of learning is the result.

Forgetting in its psychopathic form or repression is called morbid forgetting, as distinct from natural forgetting which occurs with the passage of time. Morbid forgetting is unconscious forgetting in the sense that we are not conscious of the reasons behind it. The Freudian view is that this kind of forgetting is a sort of biological function guarding the mind against the intrusion of experiences which cause it pain. In a way, the mind purchases peace by refusing to remember disquieting experiences. We remember our cheques and forget our bills. Slips of the pen, slips of the tongue, forgetfulness in respect of sensitive issues-all are cases of unconscious forgetting. Having been aware that Jones is married, we address her as Miss Jones (a slip). The unconscious wish that she should have been a miss determines this slip. In the slip of the tongue or pen, the thought becomes the true father of the spoken word. Any healthy person will try to forget a poignant grief such as the loss of a loved one where the loss is irreparable. The dead are soon forgotten is a callous statement but the fact that we can forget them prevents the living from going insane. Forgetting is controlled by our own will, as it were. An unwelcome idea is pushed out of the conscious mind. It may remain dormant in the unconscious mind from where it may emerge in a disguised form as some kind of a slip or involuntary behaviour which, though unusual or unsavoury, is permitted, or condoned by others as being an unavoidable lapse that everybody does.

Sometimes forgetting results from interference in our memory. Minimum forgetting occurs when learning is immediately followed by a period of mental inactivity, preferably by sleep.

Maximum forgetting occurs when learning is immediately followed by some other mental activity, and the more the second activity resembles the first, the greater the interference. If Hindi is taught immediately after English, science after mathematics, the second interferes with the first, leading to forgetting of the first. Remembering a newly learned poem is interfered with when a second poem is learned right away. This is retroactive inhibition. Learning and remembering of French is hindered more by Spanish than by physics or mathematics. It is best if a period of learning is followed by sleep; next best is relaxation or a complete diversion such as music.

Having learned something, the brain-trace gradually sets like an impression on a wax surface, and if allowed to set undisturbed, the memory is clearer and more lasting than if overlaid and obscured by other impressions. There are cases of young men who, immediately after learning something new, fell victim to accidents involving brain injuries. They showed signs of having forgotten everything that they knew upto fifteen minutes before the accident. The blow checked the consolidation process and hence the sad result.

To develop an effective memory, one must work with concentration, study actively not passively, always express what is to be remembered, and understand the sense or meaning and significance of the material being learned. Attention to these precepts cannot increase our native powers of memory, but it can certainly enable us to make the best of whatever endowments we have.

We remember things primarily because they interest us. A doctor remembers the names of his patients, a cricketer his batting average and a lover his lady love. This is called ideational memory. Memory and language are related in the sense that we remember better the things and events which occurred from the age when

we developed language than the ones that occurred before we had developed language. In terms of sub-vocal observations, we do not remember things happening when we were only three years' old and language ability had not yet developed, but as soon as language develops, we begin to remember events. We remember them, however, in behaviour, in motor habits of the nonlinguistic type. A child of ten years is afraid of dogs- he had a frightening experience with a dog in his very early life. He may have forgotten the experience but his nervous system still remembers it, even though the experience cannot be put in words.

Can memory be improved? People often ask psychologists whether it is possible to improve a poor memory. The possibilities of improvement are limited despite old wives' tales and the claims of dieticians that certain foods like almond oil, carrots and the like improve memory. This is so because memory is conditioned by factors which are largely innate. Memory involves assimilation, retention and recall. Whatever is assimilated is mostly retained and can also be recalled. But assimilation, which begins the process, largely depends upon intelligence which is commonly believed to be mostly inherited and hence there is not much that can be done to improve memory.

Another view is that assimilation and selectivity of recall are both highly correlated with intelligence, while retention depends largely on organic conditions such as fatigue, ill health, and emotional factors which cannot be altered. The position is, however, not so hopeless for remembering, more often than not, is handicapped by wrong methods of learning rather than by lack of intelligence or of innate retentiveness and in such eases a more efficient technique of study may produce marked improvement in memory.

MOTIVATION AND LEARNING

Motives are the drives that energize all behaviour. Every learned act is the result of our attempt to satisfy motives. Motives

are reasons for doing something. They give direction and urge. Motives are classified into three groups: physiological, psychological, and habit.

Physiological motives like hunger, sex, thirst, fatigue, avoiding of pain and preserving of life are satisfied by methods intimately related to social customs and habits.

Psychological motives like self-esteem, the need for security, for new experiences, for love, and to conform are very powerful and are satisfied, though never completely, by achieving goals that minister to these needs. Many of the behaviour problems in children are the result of the denial of these motives. A skilful teacher should construct problem situations that offer opportunities for satisfaction of these motives.

Habit motives like combing the hair, brushing the teeth, smoking, chewing gum, cleanliness are satisfied once we form habits to perform these activities. Habits, once established, furnish their own sources of motiv

Conflict between two or more motives has to be resolved in order to remain mentally healthy and happy. You want to win your boss's approval, but in order to do so you may earn the disapproval of some of your colleagues. You have to find a way out. A decision to do one thing at one time, howsoever risky, is one way of resolving the conflict.

Civilization frowns upon a teacher using physical force to compel children to learn. We rely almost exclusively on psychological and habit motives to encourage learning. By guiding and rewarding the child's curiosity, that is, his need for new experiences which is an important psychological motive, we can encourage him to move from one valuable learning experience to another. The habits of work and attention that we help the child

to develop will carry him through many tasks for which he may have no immediate urge.

MOTIVATION-MEANING, CONCEPT, TECHNIQUES FOR MOTIVATING THE LEARNER, ACHIEVEMENT MOTIVATION

By making sure that every unit of work satisfies some need of every child, we can create a good learning situation. Pupils are more likely to strive toward vital goals when they themselves feel that the goals are important rather than when they are prodded by a taskmaster (Smith, 1957).

The teacher must see that the child's activity takes him in a desirable direction and at the same time fulfils needs that he feels at the moment. If the child sets up goals commensurate with his abilities, he will probably succeed in reaching these. The teachers, therefore, must help the child to set up such goals only, so that he meets success which in turn will enable him to achieve higher targets.

Rewards designed to influence behaviour are called incentives. To influence behaviour significantly, however, rewards must be provided which strive to satisfy some motive. Both praise and reproof are strong incentives or motives. If praise is administered constantly over a period of time, it loses much of its potency. If administered once in a while, when it is deserved and only by a person held in high esteem by the pupils, it has a very strong effect that encourages a pupil to put in greater effort. So is the case with reproof. Though praise is somewhat more powerful than blame, both seem to stimulate learning if legitimately and properly given.

Interests are a specific type of positive incentive and are also a product of motivation. They arouse and sustain concentrated effort and hence their constant use in teaching. Teachers must have

deep understanding of the interests typical of boys and girls at each developmental level; then alone can games, books, movies, and songs that will be most appealing to a particular group of children be provided. If the teacher can adapt and accommodate classroom activities to cater to a real interest that the child himself has shown, he will succeed in creating a stimulating, effective learning situation. Since interests are the child's way of satisfying his motives, the teacher should make a sincere effort to help the child develop more satisfying activities.

Every child has a tremendous amount of motivation that he is eager to satisfy every hour of the day. If you suggest desirable educational goals that appeal to the child's motives, and if you give him frequent opportunities to succeed in his attempts to reach those goals, you will be able to harness one of the most powerful learning forces known.

Frustration, and the problems it generates are essential to the learning situation. These problems themselves become motives. The teacher need not solve all these problems. These are a necessary condition of learning. Let the child attempt to solve these problems with the teacher's encouragement and guidance. The teacher can increase both the speed and the quality of the child's learning by appealing to the motives that the latter brings with him into the classroom. The leadership function of the teacher creates the opportunity to motivate learning. Innovation and competition are a few of the motivational techniques that a skilful teacher can use to motivate pupils.

Every child comes to school with certain interests and motives. The teacher has to discover, direct and capitalize upon these motives and interests for educational purposes. Knowledge is not self-motivating. Facts become interesting and desirable when they represent a means of attaining goals which the learner wishes to achieve.

Affiliation oriented motives like gregariousness, social response, affection and love which operate freely in a classroom learning situation, facilitate learning. Similarly the prestige oriented motives are involved whenever such positive factors as social recognition, commendation and praise or negative ones such as reproof and ridicule are used in the classroom. These motives are also used to motivate learning. Competitive self-enhancement is an ever present motive in a school situation. Socially related motives have their roots in the child's culture. These are the ethnic, cultural, subcultural and community influences that impinge upon the child via his family. The family is the primary and most important social source of motivation for the child and the peer group is the second most important social influence.

Need achievement, which is a combination of motive-and-incentive conditions, is an important determinant of school accomplishment. This in itself is a very important motive which, if properly utilized by the teacher, will drive the child to reach greater heights in school work. It thus serves as achievement motivation. It also serves as an intrinsic incentive to learn. Extrinsive incentives like rewards and honours are not as powerful as intrinsic incentives, such as constructive participation in appropriate curricular activities, the child's sense of wonder, his inner urge to probe the unknown, and his sense of achievement in case of a brilliant performance.

HUMANISTIC VIEWPOINT

The humanists tend to understand behaviour rather than to control and manipulate it. Personal choice, creativity and self-actualization are their primary concerns. Maslow (1970) and Rogers (1959) are the chief exponents of humanistic psychology. They think that one of the primary motivational forces is the wish for self actualization, i.e., the wish to become the kind of person, in actuality, that one is - potentially capable of becoming. The actualizing tendency is regarded as an inherited characteristic.

Self-actualizing adults are full functioning, self aware, creative, open to experience, and self accepting. They possess social interest and a democratic value system. The life experiences of these people, according to Maslow (1970), are 'challenging, exciting, and meaningful,' rather than "happy and satisfied" which aic hedonistic terms. Maslow (1970) does concede that some human activity is motivated by the gratification of biological needs, but he rejects the proposition that all human motivation can be explained in terms of deprivation, drive, and reinforcement.

Maslow's hierarchical theory of motivation is a unifying concept. It holds that healthy individuals, whose lower order needs for physical health, safety, lo and esteem are reasonably satisfied, strive continually and with high intrinsic rewards for self actualization. With an appropriate curriculum, their inherent potential desire to learn and to create spurs them on towards achieving their real potentials (Frendsen, 1961).

The higher order needs-the desire to know and understand, the aesth needs as also self actualized needs-according to Maslow (1970), can control activity only after the lower order needs or deficiency needs have been gratified.

Satisfaction of self actualizing needs is expressed in various careers. One person becomes an athlete, another a teacher, yet another a soldier, and so on. The persons in whom these needs are relatively well satisfied are the healthiest in our society. On the other hand, failure to gratify a deficiency need results in disturbance or dysfunction while gratification remedies the dysfunction.

Rogers (1959), like Maslow, assumes that self actualization is inborn, but that it can be impeded by social constraints and unfulfilled needs. It can also be facilitated through environmental supports.

The humanistic theory has been adopted by many educators. Many teachers use it to identify the ungratified needs of students that may be impeding their urge to gratify the growth needs, thereby causing personal or discipline problems.

Education must do more than merely cater to the present motives and interests of pupils. The great variety of motives in human behaviour is brought about by learning and it is, therefore, the function of education to stimulate the development of new, more mature and more productive motives, interests, and purposes.

COGNITIVE PSYCHOLOGY AND LEARNING

Ausubel (1963), a modern cognitive psychologist focussed attention on meaningful learning of verbal information. Mayer (1979) regards the meaningful learning approach as the most promising for eliminating rote memorization that students often resort to.

Ausubel's theory shows that verbal information becomes available to the learner through either reception or discovery. The child learns the new information either meaningfully or by rote. Therefore, the four basic kinds of learning are: Meaningful reception, rote reception, meaningful discovery, and rote discovery. Meaningfully acquired information is assimilated into the existing cognitive structure and is remembered well. Information acquired by rote is not assimilated and is quickly forgotten (cognitive structure is the content and organization of a person's ideas in the particular subject field). In reception learning, the content of what is to be learned is received by reading or listening, while in discovery learning the learner gets information independently, it is not provided to the learner.

Whereas reception and discovery are the processes by which information becomes available to the learner, the qualifying terms 'meaningfully' and 'by rote' refer to how the learner acts on the

information. When the learner memorizes the new information verbatim, the process is 'rote.' On the other hand, if the learner relates the new information to what he already knows and thereby assimilates it into his existing cognitive structure, the process is meaningful. Ausubel formulated the meaningful learning theory which, in fact, was his reaction against unnecessary and ineffective rote learning.

AUSUBEL'S MEANINGFUL LEARNING THEORY

When we acquire knowledge in several subject fields, we develop cognitive structures related to each field. New information is then assimilated into the cognitive structure by subsumption and other processes. Ausubel uses these processes to explain meaningful learning.

In meaningful reception learning, we relate new information to higher order concepts and principles already in our cognitive structure by either derivative or correlative subsumption. For example, a child already knows the principle that dogs bark. Now the child hears the new information that 'the neighbour's dog is barking.' This new information is subsumed by the higher order principle. In other words, the meaning of the new information is derived by relating it to the principle, is subsumed by the principle, and is thereby assimilated into the child's cognitive structure.

Correlative subsumption takes place when new information extends or modifies the higher order concept already learned. For example, a child has a concept of the triangle as a plane, simple closed figure with three sides. The child now reads that an equilateral triangle is a plane, simple closed figure with three sides of equal length. This new information is correlated by him with the higher order concept already known to him, thus extending his concept of the triangle so that this concept includes the equilateral triangle as a kind of triangle. Stated in terms of meaning, the new concept, the equilateral triangle is readily

understood, subsumed by the triangle, and assimilated into the cognitive structure regarding triangles.

The new information is related to and subsumed by a more inclusive idea by means of derivative and correlative subsumption. This is subordinate learning. Thus, initially a higher order concept is learned by proceeding inductively from particular instances that have been learned to a new and more general concept. For example, a child perceives that black, yellow and blue is each a colour and arrives at the superordinate concept of 'colour'. This learning is called 'superordinate' learning.

The concept already learned not only subsumes a new information, or is not only extended of modified by a new information but even an altogether new concept may be learned when there is information to which the concept already known can be related. Ausubel calls it combinatorial learning. For example, a student may learn how atoms function by observing a physical model that depicts their function. For this kind of learning to occur, a student must have some general knowledge first to understand the model and then the new principle. Students learn several new generalizations and concepts in science and social studies in this way.

As has been shown, the learning of new material is facilitated when the learner has an appropriate cognitive structure to which the new material may be related. It means that providing the learners with higher order concepts and principles in advance of the new material will facilitate the learning of new material. A small amount of verbal or visual information that is presented to the learner in advance of the new material is called advance organizer (Ausubel, 1963). One kind of advance organizer that provides information to activate a student's existing cognitive structure facilitates combinatorial and superordinate learning. Another kind at advance organizer provides a new concept, a

principle or other cognitive structure that the learner is to assimilate. The new information is then related to this organization by derivative or correlative subsumption. While teaching, it is, therefote, wise to include some new information whenever it helps the student to grasp t relationship between the advance organizer and the new material.

In learning how to describe English sentences or learn transformational grammar, the following advance organizer may be very effective:

All sentences can be described in terms of certain basic sentence patterns. There are nine basic sentence patterns in the English language. Every sentence that you read can be described as taking the form of one of these nine basic sentence patterns, or as a combination or rearrangement of the nine basic sentence patterns. A comparable example may make it clear. There are three primary colours, (red, blue, and yellow), and all hues can be obtained from varying mixtures of these.

In all nine basic sentences, the subject group is always a noun phrase. In other sentences, which are combinations or rearrangements of basic sentences, the subject group may or may not be a noun phrase. When you learn about noun phrases, you will find that the last word in all noun phrases is a noun: What is a noun? Instead of depending on the traditional definition of a noun as the name of a person, place, or thing, you will learn to use the noun test sentence. If a word fits in the noun test sentence, it can be used as a noun. In a later lesson, you will be acquainted with other ways that can help you identify nouns (Blount, Klausmeir, Johnson, Fredrick, and Ramsay, 1967, p. 38).

Lawton and Wanska (1979) extended the idea of advance organizers to include, besides substantive information, process information also. They formed randomly four groups of children of grade 1, grade 3, and grade 5. One group received a content

organizer that provided only higher order concepts. A second group received only a process organizer that laid rules for classifying. A third group received both the content and the process organizers. The fourth control group received material unrelated to the learning task. The learning activity consisted of hearing and seeing information about dwellings, tools, and other items of three different primitive groups of people. Learning to classify the items was one part of the learning task, and understanding relationships between superordinate and subordinate concepts was the other part. The children were tested at the time of the experiment and again five months later. On both the initial and the retention test the rank order of performance from the highest to the lowest was the combined organizer, the process organizer, the content organizer, and control. The mean initial learning and retention scores of children receiving the combined organizer were from about 50 per cent to 300 per cent higher than the mean scores of the control group and from 25 per cent to 100 per cent higher than those of the other two groups.

It may be difficult to prepare written advance organizers for each of the different lessons that teachers have to teach. Therefore, the only opportunity to make an effective use of advance organizers is in oral presentation to students The most important aspect of developing an advance organizer is to provide a concise conceptual framework in words pictures or both that the students easily understand and to which the new information may be related. Teachers must include new information to ensure that the students understand and can use the organizers effectively.

In meaningful discovery learning, the learner receives information independently rather than in the final form as in meaningful reception learning. The information received independently is related to the learner's existing cognitive structure. Discovery learning is particularly appropriate for older students in learning how new knowledge is discovered in various

disciplines. It may also be useful when children in preschool and early elementary school years are forming many basic concepts with little or no adult guidance. However, for students who are capable of learning concepts and principles by meaningful reception processes, discovery learning is neither feasible nor economical for learning large bodies of subject matter.

INFORMATION PROCESSING

Traditionally, learning was defined solely as a change in observable behaviour resulting from practice. At present, though cognitive psychologists agree that learning results in a change in observable behaviour, they also regard learning as a change in the learner's knowledge-both the amount of knowledge and the way it is organized. Cognitive psychology is particularly interested in mental processes that students employ in learning mathematics, science and in other fields of knowledge. When learning is related to information processing there is a better understanding of these mental processes. The interpretation of information processes described here focuses on the internal cognitive operations and includes the control of the operations by the individual. For this reason, it is called 'cognitive information processing.'

COMPUTER AND HUMAN INFORMATION PROCESSING

Cognitive psychology and computer information processing are integrated to simulate human learning processes. Considerable success has been achieved in simulating less complex thinking processes and in formulating models of human information processing (Bower and Hilgard, 1981).

Computers input, process and output information rapidly without making errors. Figure 3.6 shows the main features of computer information processing.

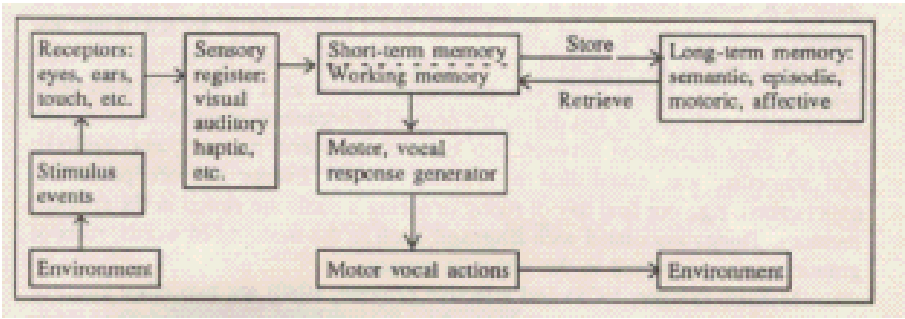
How computer operation and human learning processes are analogous may be explained thus: the computer takes in

information from the environment from a card reader or other device. Human beings take in information through their sense organs (hearing or reading). The information is coded, stored, retrieved from storage, and processed electronically by the computer. Human beings also encode, store and process information; however, this sequence is controlled and monitored by programmes that they learn. Finally, after the information is processed by the computer, it is outputted to the environment through a device such as a line printer in the form of a computer printout. Human beings, after they process information, may generate and make vocal responses, such as speaking, or muscular movements like typing. In some cases, human beings may not respond overtly and may instead store the processed information in their long-term memory.

Thus the programmes for controlling and monitoring information processing are inputted to the computer, but are learned by the human being. The cognitive psychologist is more interested in the nature of these human programmes-how they are learned and how they function in the processing, storage, and retrieval of information. He makes detailed analyses of what occurs internally as a person learns. One area of his high interest is the phases or steps of the information processing sequence. These phases are referred to as mechanisms or structures. A second area is the mental operations involved in each phase and the third is the internal control and monitoring of the mental operations.

PHASES OF HUMAN INFORMATION PROCESSING

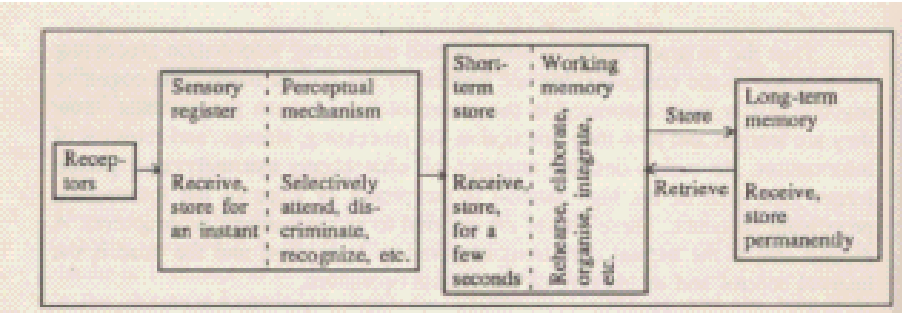
The phases of human information processing are described below and are shown in Fig. 3.7. The model shown in the figure summarizes the idea drawn from the models of Shiffrin and Atkinson (1969), Atkinson and Shiffrin (1971), Anderson (1980), Bower and Flilgard (1981), and Wickelgitn (1981).



The phases-sensory register, short-term memory, and long-term memory- are phases of the temporal processing sequence and not separate or identifiable structures of the brain. Similarly, the information flow represents the acquisition, processing, storing, retrieval, and action sequence, not an actually observed transfer of neural information from one phase to another.

We get stimulation from our environment that activates our receptors and is transformed into neural information. This persists in a structure, called the sensory register, for a fraction of a second (Sperling, 1960). All the information that is sensed is registered. However, only part of it is attended to, transformed and entered into the short-term memory.

Short-term memory is the phase of information processing during which information from the sensory register is stored, and held for as long as 30 seconds (Shiffrin and Atkinson, 1969). The actual processing of the information takes place in the working memory. Another way to think of the duration of short-term memory is in terms of the amount of information that is stored. On the average, one can receive and retain only seven items (Picture, word, meaning) of information, plus or minus two (Miller, 1956).



Some of the information received in the short-term memory is not processed and is lost, while some of it is processed and is transferred to the long-term memory. Shiffrin and Atkinson (1969) regard long-term memory as permanent. According to them, failure to recall something learned earlier is attributed to a failure to retrieve it, which means that it is in the long-term memory from where it can be brought to a conscious level. But Loftus and Loftus (1980) do not think that everything stored in long-term memory is permanent and never lost. In their experiments, they found that some information is lost as it is replaced with other information, and some is lost during the process of organization and reorganization.

A clear distinction between two kinds of long-term memory, viz., episodic and semantic, was established by Tulving (1972). Events that are personally experienced, e.g., our first day of flying or seeing a battle are stored in the episodic memory. Things associated with language, such as the meaning of words, rules of grammar, etc. are stored in the semantic memory.

Motoric (Singer, 1978) and affective (Zajone, 1980) are two other kinds of memory. When we prepare to write something, we retrieve a programme for writing from the motoric memory that guides our writing movements. As we see someone we know, we retrieve some kind of feeling towards the person from the affective memory. There is a vocal or motor response generator that

transforms an input from the working memory into impulses that guide the effectors in producing overt responses. Some of the information that is processed in the short-term memory is transferred to the long-term memory where it remains. For example, we solve a problem mentally and store the problem and its solution. At other times, we respond overtly by writing out a solution, by speaking, or by making other movements.

MENTAL OPERATIONS IN INFORMATION PROCESSING

A set of internal mental processes closely associated with the different phases of information processes is shown in Fig. 3.8. The purpose is to illustrate that much initial learning involves retrieval of earlier learned information from long-term memory. We attend to the environment, though only to some aspects of it, to acquire information by means of receptors. Again, not all the information received in the sensory register is subsequently encoded, or transformed neurally, and stored in the short-term memory. Learners selectively perceive only a part of what is received in the sensory register. What they perceive is related to their prior experiences, including their feelings regarding the particular stimulus. For example, 12-year olds are selective and can concentrate exclusively on task relevant information whereas 9-years olds are nonselective (Hale and Alderman, 1978).

The mental processes carried out in the short-term memory are different. While learning meaningful prose material, we ‘rehearse’ the last items we have read, ‘organize’ by connecting two or more items of the new material before relating them to what is already known. We ‘elaborate’ by relating the new information to what we already know. Siegler (1983) showed that what we already know influences what and how we learn. Paterson, Swing Braverman and Buss (1982) found that elaboration markedly facilitates achievement. We ‘integrate’ by combining the items into a more complete knowledge structure. Integration of information in the working memory is necessary for encoding prose material

into long-term memory (Masson and Miller, 1983). Guilford (1967) says that the five mental operations involved in learning and remembering are: cognizing, remembering, convergent thinking, divergent thinking, and evaluating. These are the operations that he believes are particularly used by gifted and creative students. Relating Guilford's operations to the information processing operations described earlier, cognizing, which includes recognizing and understanding, subsumes attending and selective perception. Remembering includes storage and retrieval. Divergent thinking generates new ideas. Convergent thinking produces the correct answers or solutions. Evaluating means reaching decisions concerning correctness and adequacy. Thus, divergent thinking, convergent thinking and evaluation are the information processing operations that substitute for rehearsing, elaborating, organizing, and integrating.

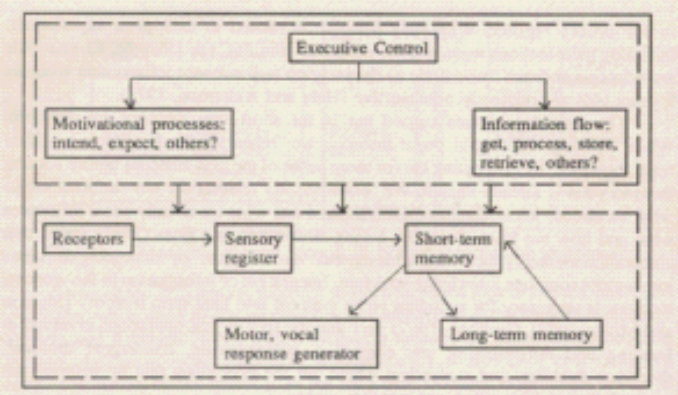
EXECUTIVE CONTROL OF INFORMATION PROCESSING

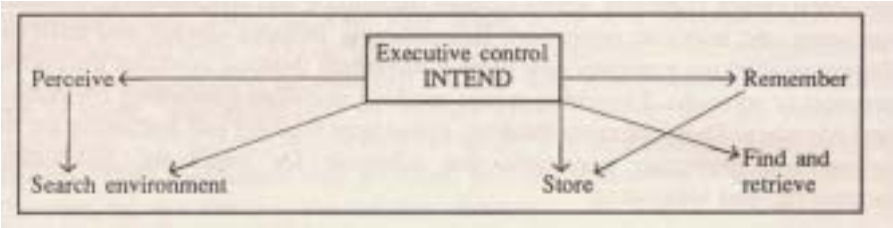
The concept of executive control in cognitive information processing explains how we consciously control our internal mental processes. There are two aspects of the internal, or executive control of our own learning, i.e., control of motivation, and the control of the information flow and related mental operations. Figure 3.9 shows how executive control completes the model of cognitive information processing.

'Intend' indicates the process for consciously controlling the direction of one's thinking (Miller and Johnson-Laird, 1976). These authors imply that intentions arise in connection with the carrying out of a plan to reach a goal, say getting to a seminar at 10.00 a.m., or gaining an understanding of cognitive information processing. The relationship, according to them, between 'intend', 'perceive', and 'remember', is depicted in Fig. 3.10. For example, we intend to write a letter to a relative. This intention activates the processes that control the input, flow, storage, and retrieval of information. A control instruction related to perceiving is to

search the environment for related information, perhaps writing materials, the correct address, and a previous letter from the relative. A control instruction related to remembering is to get the relevant information from the long-term memory concerning what to write. We generate instructions for finding and retrieving relevant information from the long-term memory and other instructions for storing what we write throughout the letter, i.e., the writing sequence. When we complete the letter, one control instruction is to store the fact that we have written the letter, and another is to store some of its contents.

In the past, we often recognized that a student was having a problem of attention, motivation, initial learning, or retention. Now we can diagnose whether it is a problem of sensory reception, short-term memory capacity, rehearsal, organization, executive control, or a similar specific process. A better understanding of initial learning processes is a significant contribution of the information processing theory to the improvement of learning.





CHAPTER - VIII
REMEMBERING AND FORGETTING

In the last chapter we were concerned with the process by which people acquire responses, knowledge, information, skills, etc. and it was mentioned that this process of acquisition is adaptive in nature, that is, whatever is acquired is used on a subsequent occasion. We may see three stages involved in this whole process; firstly acquisition or learning; secondly retaining or storing the acquired material; and thirdly bringing back or retrieving the retained material or remembering. It should, however, be kept in mind that this distinction of three phases or stages is only conceptual; actually even while the first phase of learning or acquisition is in progress the other two phases may be involved. Thus, when a child is repeatedly reading a multiplication table, it is only on the first occasion that learning is operating alone. On the second occasion, however, whatever has been stored from the first occasion is remembered. Therefore, we may say that, to a large extent, what we retain depends on what, how and how much we have learnt. Pioneering work on remembering was done by Ebbinghaus. The term learning is used here in a very broad sense to mean any experience and not just information alone or any skills which have been acquired through deliberate efforts.

We are all aware that we neither retain nor remember everything that has been learnt or experienced; indeed there is an inevitable loss. This phenomenon of losing is evidenced by our inability to remember what we have learnt and is known as forgetting. Forgetting, therefore, is the loss in learning inferred from the process of failing to remember. Often, even if there is no actual loss of learnt material, all learnt material is not remembered. Thus, forgetting can be categorised as being of two types - actual and apparent. In fact some psychologists claim that anything once learnt is never lost. A distinction is sometimes made between retention amnesia and recall amnesia. The term amnesia means an inability to recall.

RETENTION

Retention is a part of the process of memory. We are aware that learning experiences or information about events, things and the people we encounter are retained or stored or recorded. How much is retained and how long the retained material lasts depends on various factors like learning, motivation, forgetting, etc. However, whether an experience has been retained and, if so, how much is retained cannot be seen or felt but can only be inferred. The best way to infer retention is through performance. Measurement of performance related to the specific information task or skill is assumed to provide quantitative and qualitative measures of what is retained and what is not. The following illustration may help in understanding this particular concept. Suppose someone asks you to recite a poem or nursery rhyme you once learnt. You may be able to recite it word-by-word without being prompted. This means your performance is perfect and you recalled the poem or rhyme correctly. But suppose you get stuck half-way because you are not able to remember a word or line. If someone prompts you, with the right word or line then you will probably know that the line or word belongs to that particular poem, i.e. you recognise it as being right the moment you hear it. This indicates performance through recognition. Finally, you may think that you do not remember the poem at all, or you have forgotten it completely. When you sit down to learn it again, you may realise that within two or three trials you have mastered the poem. You may also feel that relearning is easier than learning it for the first time. This is called the method of 'savings', sometimes also referred to as 'relearning' because saving in time and effort on the second attempt at learning suggest some amount of retention. Thus, Recall, Recognition and Savings, are considered as three methods of measuring retention. Let us now see in detail what these methods are.

RECALL

As mentioned earlier, recall involves the verbal reproduction

or repetition of learnt material. It is basically of two types - serial recall and free recall.

In serial recall learnt material is reproduced often in the order in which it was learnt or following a specific order. Many of us can recall certain material only in a particular order. For example, if we have to locate a name in the telephone directory or word in the dictionary starting with 'Res-' we cannot locate it instantly. We mentally say the alphabets starting from A up to R and flip the pages making sure that R comes after letters 0, P, Q and before letters S,T and so on. Similarly, there are people who when asked the question what is twelve multiplied by seven equivalent to (12 X 7 = ?) tend to go over the arithmetic table of twelve from the beginning and only then can recall the correct answer. In free recall, however, chunks or pieces of learnt material may be recalled freely without following any specific order. For example, every one may not go through the whole arithmetic table to recall the answer of twelve multiplied by seven. Some may reproduce the answer instantly, i.e. without following a specific order.

RECOGNITION

Recognition is evidenced when recall is either weak or absent. For instance, though you have been passing through a particular street every evening you may not recall that there was a building at a particular spot, but when you find a vacant land (because the building has been demolished) you will suddenly recognise that there was some structure or building and the land was not vacant earlier. This shows that the image of a structure or 'a building has been retained and present all along but it needed a different experience, vacant land, to make you remember that there was a building once. A classical example of this process is seen in multiple choice test. This test is often used to measure retention through recognition. If you are asked in which country the leaning tower is located, you may not remember. But if you are asked to choose your answer from a) England, b) France, c) Italy and d)

Germany, you will immediately recognize Italy as the answer. This shows that unless you encounter the word, event or experience or it is presented before you, recognition does not take place. Thus, we see that in this type of retention some sort of a suggestion or clue is presented, unlike recall.

SAVING

The saving method is also called method of relearning. Though we may not recall or recognize the material learnt once, we realize that if we learn it again we can pick it up very soon, understand and master it. For instance, a student who learns his lessons perfectly may be unable to recall them six or seven months later. But when he starts to relearn or revise the lesson he will be able to grasp and reproduce everything with ease. He may also consume much less time to do so, compared to what he did the first time when he learnt his lessons. H. E. Burtt tried to demonstrate this method. He taught Greek to a fifteen-month old infant by reading twenty lines of Greek poetry to him over and over at various intervals until he was three years old. At this point, however, poetry reading was discontinued and for the next five years the child had no contact with Greek. Later, at the age of eight, he was given Greek poetry to learn. Some of the lines were what he had learnt as an infant and others were new. He had apparently forgotten his experience with Greek as a baby; he could not recall or recognize any of the lines. But the specific lines which had been read to him in infancy were much easier for him to learn than those that were completely new. Thus, we see that recall, recognition, and saving methods are very good yardsticks to measure retention.

FACTORS INFLUENCING RETENTION

Our ability to retain learnt material is influenced by a number of factors. These factors are of different types. Some of them are related to the nature of the material, some to the amount and type of learning that had taken place and some to the conditions under

which remembering is attempted. Some of them are examined below.

REPETITION OR PRACTICE

Learning a task involves repeating acts related to that particular task. Many tasks are such that one can learn perfectly only by repeating them. For example, if one wants to learn typing or riding a bicycle, one has to repeat the various acts involved in these skills continuously until one learns these skills perfectly. It has been shown that the greater the number of times we repeat or practice, the better is our retention.

MEANINGFUL LEARNING

We have seen in the previous paragraph that learning often involves repeating a particular response or a given task. This type of learning, through repetition, is demonstrated when a child repeats mechanically his geography lessons or arithmetic tables. Similarly, a three or four-year old child who simply repeats nursery rhymes while knowing little about stars and sky, says, "Twinkle, twinkle little star, how I wonder what you are in the sky." This method of learning is called rote learning. Rote learning makes little or no sense to the learner because the repetition is done without understanding what one is repeating. However, it was found that by mere rote learning one may learn particular material but may not be able to retain it for a long period. Further, the child may not remember the learnt material for very long and even if it remembers this will contribute little or nothing to its intellectual development.

Hence, a better way of learning is to learn by paying attention to the meaning and significance of the matter that has to be learnt. It has been proved experimentally that it is easier to learn and remember something if you understand its overall meaning and can relate it to the matter you already know. This type of learning where one also learns the meaning associated with the material

helps in both storage and remembering. In learning a poem or a passage, for example, it is always better to read it, understand the whole matter and have a lear idea of what it is. With such understanding and clarity one can learn it rapidly, retain it for a longer time and remember it when it is necessary. This method makes learning more meaningful unlike the rote learning method, and results in better memory.

WHOLE VS PART LEARNING

Psychologists studying this phenomenon have tried to experiment and see whether learning the whole material of a given task would result in better retention or learning it in parts. For example, learning a poem involves repeating the whole poem until the poem is learnt, while the part-method of learning would mean learning the poem stanza by stanza. Whole learning is usually more efficient than learning bit by bit or in parts and then trying to put them together. However, the question of learning either by whole or part-method depends upon the type of material, length of material and the way it is organized. For example, students of English literature may divide poems and plays into parts and learn them, but students of trigonometry or chemistry may be unable to arrive at an answer if they break the series of mathematical or chemical equations. Thus, in the latter case the material has to be learnt as a whole. Learning by parts is effective if the parts are logical sub-units of the whole. The reader may see in this method of part-learning that it is again the meaningfulness of the material which enhances the effectiveness of learning.

MASSED AND SPACED PRACTICE

The method of learning in which the matter is learnt in one continuous sitting with no periods of rest between the practices is called the massed method of practice or learning. In contrast to this is the method called the distributed method of practice or the spaced method of learning where the matter is learnt with intervals in between the sittings. In other words, practice in this method of

learning is spaced or distributed over a period of time with intervals or rest periods during the learning session. Ebbinghaus found that in learning nonsense syllables, each practice session of fifteen minutes distributed over four days resulted in effective learning and retention compared to one hour of continuous practice session in learning the same matter. However, the distribution of the matter and length of interval has to be carefully planned and monitored lest the effectiveness of the method is lost.

MOTIVATION

We often experience that when our learning is accompanied by a motive or purpose we are able to retain that particular matter for a longer time. Thus, repetition or practice accompanied by the intent to learn is more effective than mechanical repetitions because we become more receptive if we know that the matter will be useful to us later. For example, a student who is least interested in the subject of history and has no intention of using the same may learn and reproduce everything in the examination and then forget everything soon after and even here his retention may not be very effective. Thus motivation can play an important role in strengthening or weakening the process of retention.

FEEDBACK

While performing a task or learning a particular material, if we stop and check at periodic intervals to see the results (e.g., how many correct responses one has made or how many errors have been committed), then this knowledge of results or feedback is likely to provide encouragement, correction and some sort of a reinforcement. This may subsequently lead to effective learning and, therefore, to effective retention. This method of stopping, looking and then proceeding is sometimes discussed under the heading “Knowledge of Results”

PASSAGE OF TIME

The time that has lapsed and the activities we perform in

between learning and recalling are said to exert a great influence over retention. This becomes evident, for instance, when we apologise for forgetting something very important by saying, "I do remember, it was in my mind all the while but it just went out of my mind". Thus, activities, ideas, events, etc. occurring in between learning and recalling may act as interfering variables and decrease the probability of successful retention. In a study conducted relating to this, it was found that sleeping (dreamless sleep) immediately after learning led to better retention of learnt matter. J.C. Jenkins and Dallenbach, in their experiment, found that after learning ten nonsense syllables people who had gone to sleep could recall six, and those who stayed awake could recall only one. This, perhaps, may have occurred because sleep is a state with relatively no or few interfering factors acting on the individual's mind.

So far the discussion has centered on the factors which influence retention. Now let us see where the seat of retention is. In other words, see exactly where and how the learnt material is stored. Various theories have been postulated to suggest the actual basis of memory or retention and some of these are described below. The reader, however, will see that these theories emerged out of different disciplines like physiology, biochemistry, psychology, etc. Therefore, the point of emphasis of each theory differs from the other.

One important point to be kept in mind by the reader while understanding these theories is that the theories which attempt to explain retention and memory also serve to explain loss of retention or forgetting. Thus, remembering and forgetting are like two sides of the same coin. The reader should, therefore, appreciate the twin significance of these theories.

PHYSIOLOGICAL BASIS OF MEMORY

The theories which claim that memory has a physiological

basis often emphasize the brain and neural structures as the seats of memory. Some of the theories taking such a stand are discussed here. They are the memory trace theory, the cell assembly theory and the interpretive cortex theory.

MEMORY TRACE THEORY

Adherents of the memory trace theory proclaim that everything which we encounter or experience is recorded or stored in the form of memory traces. These traces are structural units of the brain, and these units are called neurograms or engrams. These engrams are considered to be impressions established in the form of neural structures in the brain. The functioning and composition of the engram is not fully known and is still under exploration. Moreover, these engrams are not considered to be permanent structures because through measurement of the extent of retention and forgetting we know that learnt matter often undergoes changes and gets lost. Nevertheless, neurosurgical studies prove that when certain parts of the brain, especially the temporal lobes, are electrically stimulated. Individuals could recollect vividly certain experiences which were long forgotten. On the other hand, there is enough scientific evidence to prove that despite stimulation recollection is often not possible. The reason for such loss, according to the trace theory, is a fading of the engram or decay of the trace. Thus, remembering and forgetting are explained in terms of healthy live traces and decayed traces.

THEORY OF CELL ASSEMBLY

D.O. Hebb suggested that learning consists of the formation of connections between different cells in the brain which finally get established or retained in the form of complex close-cell circuits called cell assemblies. When this circuit is stimulated, the entire assembly is activated and, as a consequence, the entire learning experience is recalled. This is a very common experience. For instance, sometimes when you try and recollect a single unit of an event or experience, like a word or sentence from a song,

the whole song and other experiences associated with it may come back to you in a sequence (even if you do not want it). Remembering, therefore, is said to result out of stimulation and adequate stimulation leads to perfect recollection. Forgetting, on the other hand, is said to result out of inadequate stimulation. Thus, formation of cell assemblies is considered to be the basis for memory; adequate and inadequate stimulations as the basis for remembering and forgetting.

THE INTERPRETIVE CORTEX

Wilder Penfield, an eminent neurosurgeon, studied over one thousand epilepsy cases. He and J.H. Jackson found that epilepsy is caused due to brain lesion. Patients, during seizures, narrated that they often experienced sensations like strange smells and intellectual auras or dreamy state as immediate precursors or indicators of an epileptic attack. These auras are conscious images or experiences of the past, sometimes vague and sometimes vivid. Penfield performed craniotomy on the patients, where a portion of the skull was removed and the side of the brain was laid bare. He stimulated the temporal lobe and recreated the memory of a childhood experience that formed the intellectual aura accompanying the epileptic attack each time.

Penfield does not suggest that the interpretive cortex is the seat of memory because surgical removal of the temporal lobe from which a recollection has just been evoked by stimulation does not abolish an individual's memory of the event just recalled. But nevertheless, his findings boldly emphasize the permanent recording of experiences in the brain in spite of the process called forgetting which inhibits or forbids remembering. His technique of electrical stimulation, to some extent, suggests that inadequate stimulation may be manifested in the form of forgetting.

BIOCHEMICAL BASIS OF MEMORY

Role of Ribonucleic Acid (RNA)

Scientists working in the field of chemistry have proposed that Ribonucleic Acid or RNA, one of the potential chemical agents, is responsible for memory. The DNA (Deoxyribose Nucleic Acid) and RNA (refer to chapter on The Body and Behaviour) play an important role in the production and synthesis of proteins. These are molecular structures which influence the content and structure of cell development in the organism. Since the RNA is capable of remembering and executing the instructions of the DNA for making proteins, it is hypothesized that it is likely to store even other kinds of material.

This assumption evoked the imagination of scientists and a number of experiments were conducted on animals like cats, rats and even on worms. H. H.Hyden and E.Egyhazi have isolated single brain cells of rats and analyzed their RNA both before and after a rat learnt a new skill. They found quantitative changes in the RNA and that the synthesis of protein occurred during and after learning had taken place. They explained that incoming nerve impulses cause an electrical disturbance in the neurons and this disturbance alters the arrangement of the chemical basis in the RNA chain. This, in turn, changes the cell structure and content and affects that particular cell's future reaction to the same stimulus. However, there is no substantial evidence to prove that changes in the structure of RNA are manifested in the form of qualitative differences in behaviour.

One particular study which is of great relevance is the study conducted on planaria or flatworms or tapeworms. We all know that planaria has a head and a tail and the tail part can grow a new head and the head part a new tail. In an experiment, conducted by J.V. McConnell, A.L. Jacobson and D.P. Kimble, planaria were conditioned to curl up in response to light. They were then cut into halves. Some were left to regenerate in plain water, and the others were put into water containing an enzyme that destroys

RNA. When the two groups of planaria had grown their new heads and tails, they were tested to see whether they had retained their former learning. The regenerated planaria, whose RNA had not been destroyed, showed an ability to relearn rapidly because both heads and tails remembered their previous conditioning. With the worms whose regeneration had taken place in water treated with an enzyme, the results were interesting; only the head ends that had grown new tails retained the previous conditioning while the tail ends that had grown new heads showed no signs of conditioning at all. So it was concluded that the RNA in the tails of the plain-water planaria made it possible for the memory of the conditioning to be passed on to the new heads. But the planaria deprived of RNA did not have such a faculty. The head part, however, retained the memory but the tail part was unable to grow a head that could profit from the tail's memory. J.V. McConnell and E.R. John found that cannibal worms which ingested classically conditioned worms (classically conditioned planaria were grounded and fed to planaria, and these were considered as cannibal planaria) later performed better than did cannibals which had ingested untrained worms. Another experiment conducted on planaria showed that the injection of RNA extracted from trained planaria may enhance responding in untrained planaria. Though these studies have opened new avenues for memory research, scientists need to accumulate more evidence to say definitely that RNA is the basis of memory, especially human memory.

PSYCHOLOGICAL BASIS OF MEMORY

So far we have discussed memory or storage of learning which has a neural and chemical basis or rather a biological basis. In the following discussion we will see how psychological processes too can provide a basis for memory. The processes described here are primary and secondary memory, motivated memory, trace change and so on.

Primary and Secondary Memory

This dichotomy of primary and secondary memory is based on psychological processing. The concept of primary and secondary memory was formulated by William James. According to him these two dichotomised storage systems depend on the nature of consciousness. Information in primary memory was considered to be that matter which is currently in consciousness and that which belongs to the psychological present. Secondary memory items are said to be absent from consciousness at a given point of time and belong to the psychological past. This description, however, was found to be inadequate because it says little about the processing of information in these two systems, the relationship between the systems, etc.

This theory remained dormant for a long time and was revived recently. Today though not in the same shape, it is expressed in the dichotomy model proposed by Endel Tulving. His model dichotomised memory into episodic and semantic memory. This will be discussed later in this chapter.

MOTIVATED MEMORY

Yet another view that discards all the other views comes from psychoanalysis. This theory claims that an individual will remember what he wants to remember and forget what he does not want to remember. The key concept guiding this motivated memory theory, according to Sigmund Freud, is repression, i.e the unconscious blocking of information having painful or anxiety-provoking associations. Such associations would manifest themselves through forgetting, a slip of the tongue or pen, etc. in which the speaker or the writer makes an error which is said to reflect his underlying feelings rather than his intended meaning. The clearest evidence shown by Freud to support this concept is hysterical amnesia or fugue, a condition in which a person under emotional stress may be completely unable to recall anything about his life. Such reactions are fairly common when amnesia is psychological in

origin. Traumatic experiences such as those occurring under combat conditions, severe emotional stress, etc. can also produce amnesia. The reader would have surely seen or heard about this type of amnesia or fugue because it has become one of the popular themes of paper-back fictions, television shows and motion pictures.

A case recorded by Masserman is presented here. Bernica L., a forty-two- year old housewife, was brought to the clinic by her family who stated that the patient had disappeared from her home four years ago and had recently been identified and returned from R -, a small town over a thousand miles away. On rejoining her parents, husband and children she had at first appeared highly perturbed, anxious and indecisive. Soon, however, she had begun to insist that she had really never seen them before and that her name was not Bernica but Rose P. and that it was all a case of mistaken identity. She also threatened that if she were not returned to her home in R - immediately she would sue the hospital for conspiracy and detainment. We will not go into the details of the causes behind her amnesia, the treatment procedure, etc. here. However, under treatment eventually this patient got readjusted to her actual circumstances. Thus, it can be seen how motivation plays a role in remembering and not remembering an experience.

TRACE CHANGE

The German school of gestalt psychology which flourished in the early part of the twentieth century, though preoccupied with the study of perception, did show some interest in the study of memory also. Their interest in the study of memory was directed towards exploring two specific areas, memory trace and change of the trace due to the organisation of memory. They predicted that there can be no decay or destruction of the memory trace under normal conditions (no injuries or infections of the brain). Since their perceptual research was confined to ‘form’ their experiments on memory were confined to memory for forms or

structure. These psychologists claim that memory trace for a shape would change progressively over a period of time toward a better, more regular and symmetrical figure. For instance, when you see a triangle or a hexagon with gaps, the memory trace would spontaneously tend more and more towards a perfect triangle and hexagon leading to a good gestalt. Further research conducted in this area showed that even less organised figures, whether it be shape, form, size, sound, or for that matter any experiences which are established, in the course of time undergo certain changes. These changes, however, are not erratic and gestalt psychologists identified certain principles which make these changes possible and lead them to good gestalts. The principles identified are levelling, simplifying, sharpening and elaborating. The way these principles operate can be seen from the following illustration. A three- year old child after learning the alphabets perfectly, was asked to write them after 3 months of vacation; what she wrote is shown in Figs 10.2-10.5. These figures illustrate the concept of trace change. Some of the changes which occur are as follows.

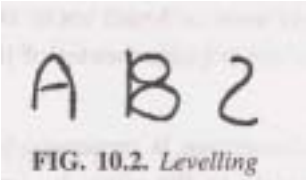


FIG. 10.2. *Levelling*

Levelling is a tendency to reduce the irregularities and make the original object or experience less sharp by dropping the details.

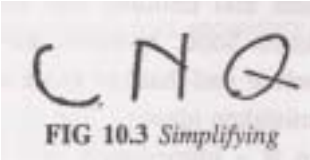


FIG 10.3 *Simplifying*

Simplifying is a tendency to make the original figure or sound or experience less elaborate and less complex compared to the one which is being recalled.

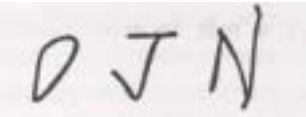


FIG. 10.4 *Sharpening*

Sharpening is the process by which certain details in the memory are accentuated and others are dropped. So some objects and events become more sharply defined in recall than they were in the original experience.

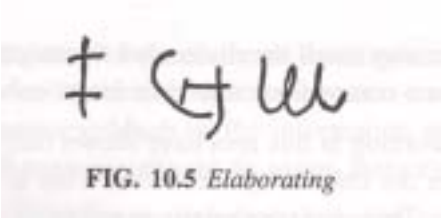


FIG. 10.5 *Elaborating*

Elaboration is the process by which some objects and events get elaborated in recall than they were in the original experience. The material recalled after a certain period of time, though meaningful and accurate, undergoes changes. For instance, ask your friend to narrate a story that was read an year ago. If you carefully analyze the content of the story and compare it with the original experience, you will realize that a lot of details have been added, some dropped, some changed, some exaggerated and so on.

Interesting experiments of similar nature were carried out by Bartlett at the Cambridge University, using both pictorial and verbal material. His findings produced evidence for the occurrence of such systematic changes in remembering.

INTERFERENCE THEORY

The theory of interference proclaims that we can store and recollect what we have learnt as long as some other material does not interfere with the material we have already acquired Interference, however is inevitable as long as we live New material or experiences have to be encountered. And this tends to impair the information we are trying to recollect. Interference may come either from the information we acquired about the item we are trying to remember or from materials memorized earlier. These two types of interferences are called Proactive and Retroactive

inteference or inhibitions because they inhibit remembering. As the discussion proceeds further one may see that this theory puts more emphasis on forgetting rather than memory storage.

PROACTIVE INTERFERENCE

When previous information or learning experiences of the past interfere with the retrieval of something which has been learnt recently, it is called proactive inhibition. For instance, try and teach a preschool child two nursery rhymes. After making sure that one has been learnt completely, teach the other. When you ask the child to recollect the rhyme which it learnt later it may start off correctly but end up reciting the one it had learnt earlier.

RETROACTIVE INTERFERENCE

It is not always the case that past material interferes and hinders the retrieval of previously learnt information. Recently learnt material can also interfere. This phenomenon is referred to as retroactive inhibition. Take, for instance, the same child who learnt the rhymes. If asked to recollect the one which he or she had learnt earlier he or she may recall the rhyme, but thoroughly jumbled with the later one. Here, interference comes from materials learnt subsequently.

Psychologists working in this area have shown that in both cases the greater the similarity between the interfering events and what is learnt, the greater is the degree of interference. Thus, our vocabulary, experiences, events, etc. in life are so similar that it should not be surprising if there are both proactive and retroactive interferences in our memory.

RECENT TRENDS

For psychologists working within an information processing framework, a computer provides an apt analogy for what happens inside a person's head. The computer is taken for a giant brain because both computers and people are considered to be

information processing systems. Both computers and humans take in information from the environment; computers do this using card readers, tapes, etc. whereas human beings do it using their sense organs. Inside the computers, the information from the environment is manipulated, recorded and combined with other information already there by the activation of electronic registers, while the same is done in human beings by the activation of neurons. A computer conveys information to the environment through output devices such as teletypes and line printers. The human beings convey information through their mouth, hands, etc. Therefore, human behaviour and computer behaviour are viewed as resulting from an interaction between information acquired from the environment and mechanisms present within these systems that process and utilise the information. This approach also claims that input or the information acquired is processed and then stored. Some of the ways of processing identified information are cueing, coding, recording, categorising, etc. For further information on information processing the reader may refer to the chapter on learning and artificial intelligence. Some of the memory models evolved out of the information processing system which will be considered in this chapter are short-term and long-term storage systems, semantic memory, etc.

A group of psychologists, impressed and influenced by the model of information processing system, explained storage of an experience or memory in terms of processing through various stages. According to them, the storage system is something like a refinery where the raw material undergoes various stages of processing. Whether it is finally discarded or stored depends upon the way it has been processed. The significant stages of information processing are the sensory stages, short-term stage of memory (STM) and long-term stage of memory (LTM).

STAGES OF MEMORY

Sensory Stage: The term ‘sensory memory’ is used to describe the state when the sensory registers receive incoming

information and hold them for enough time to be processed. This type of memory is the most basic or primitive form of memory. It is very brief. Many of the elements entering our sensory memory get eliminated while others are processed further to enter the stages of short-term memory or long-term memory. Much of the information and the knowledge we have about this stage of memory pertains to visual memory.

When we look at an object our eyes get fixated at any one point for about one fourth of a second and keep moving in jumps and not continuously. Such jumping movements are known as Saccadic movements and there is also a limit to the amount of information people can get and store in one act of fixation, which in general ranges between 4 and 5. This limit is referred to as a span of apprehension. Some other properties of sensory memory have also been reported by experiments. Firstly, the sensory register retains the mental representation only for a very brief time. These are known as icons and the sensory register for retaining them is called iconic memory. Mostly icons do not last for more than a second but under certain conditions this duration gets extended. For example, if the stimulus intensity is high, then the duration of the iconic memory can be longer. It is because of this iconic memory which lasts for some time, we experience continuity in our perception and the jumping experiences resulting from the saccadic movements are not felt. Another important fact about this memory is that one image can be laid on top of another which results in a summing up of information. Similarly, psychologists refer to what is known as echoic memory referring to auditory memory. While iconic memory and echoic memory are very similar in their properties in general, echoic impressions last longer. Both Icons and echos are faithful representations of the corresponding stimuli and are not results of any encoding. They are in a way exact representations or photocopies of the sensory impressions that are registered.

SHORT-TERM MEMORY STAGE (STM)

This is the second stage of processing where the information or stimuli received is held for a short time. Though active and conscious, this is less permanent, brief and less organised. We often wonder how we can forget the material or information learnt a few moments ago. For instance, you are trying to add a long list of numbers or counting money and your friend comes and distracts you. When you return to your work you will realise that you have forgotten what your last count was, and you will have to start right from the beginning, perhaps, muttering a curse. Thus, it can be seen that, at times, material is stored only for a short while and then it is forgotten.

A number of experiments have attempted to study the capacity for retention under conditions of short-term memory. The experiments have taken the form of exposing different kinds of material, numbers, simple digits, words, etc. for a brief time and asking the subject to recall. Most of these studies have shown that in general, the number of terms or units which people can recall after one presentation varies between 6 or 7, irrespective of the nature of the material, whether they are short numbers or long numbers, short words or long words. This shows that short term memory involves, grouping of numbers, letters, or digits and that some kind of relating of individual elements into economical and meaningful units takes place, to enable better short-term remembering. Such meaningful grouping of units is called chunking. Each organized unit is known as a chunk. Thus, if 8,7,6 represents, one chunk each, 172, 196, 208 also constitute one unit each. The chunking in the former case involves, one digit each, while in the latter, each chunk involves three digits. But, from the point of view of the subject remembering, both kinds of units are equivalent. It has been found that when chunking is adopted, the ‘immediate memory span or the maximum number of chunks that people are able to recall immediately after one presentation ranges between 5 and 9. Chunking is a strategy that can be adopted and

developed to increase the amount of material that can be recalled as part of short-term memory. One can learn to organize the individual elements into larger chunks as one grows. Chunking can play a unique role when we have to hear and remember urgent and immediate, and coded messages. One can here see a link between short-term memory and long-term memory. Chunking involves some form of relating the material in the short-term memory to long-term memory.

The ability to develop and use larger and larger chunks, thus helps one to improve one's memory. The ability to improve chunking involves two processes. On the one hand, as one grows. there is an increase in the number of chunks, one can organise and remember. More important is the ability to make each individual chunk large enough. A number of studies have shown that people can be trained to organise elements in short-term memory into the longer and longer chunks. Very often when we visit a hotel or a restaurant, we find that waiters taking orders from a number of customers, listen to a number of customers, just once, and remember all of them. Here, most probably, the waiters have evolved some effective strategy of grouping the orders that bring about an overall increase in the amount of material remembered. While evolving better and longer strategies chunking can contribute to an increase in the overall amount of material. It should be mentioned that the path of improving memory is a long one which calls for considerable amount of planned effort and learning. In addition, it also involves encoding and decoding of material already stored in one's short-term memory. Thus the strategies of chunking should be related to strategies of relating elements in short-term memory to elements in the long-term memory. In fact, where information flows freely between short-term memory and long-term memory, the overall power to remember is generally higher.

LONG-TERM MEMORY (LTM)

Short-term memory is only one stage of information processing, because we often remember certain events, people, things or experiences for several years. In other words, we never forget about them even if we want to. For instance, it is quite fascinating to see an eighty-year old grandfather who learnt geography when he was twelve years (with no exposure later in life) teaching about winds and soil to a seven-year-old great-grandson. The fact that some information remains and some gets discarded poses a more challenging problem to the scientist rather than what is stored and where it is stored.

Scientists working in this area have identified various factors which are responsible for short and long-term storages. One assumption is that when the material is in the short-term stage and has to be retained for a longer duration, then rehearsing or repeating the material either silently or aloud is necessary. Going back to the illustration of counting a long list of numbers, supposing you had repeated a couple of times the last number you had counted before attending to your friend, perhaps you might not have forgotten it.

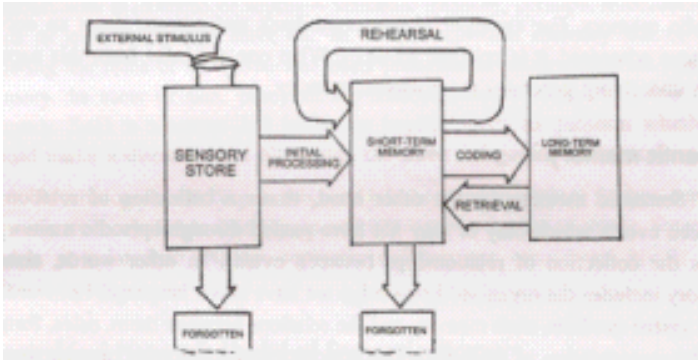


FIG. 10.6. *The three stages of memory*

Apart from repetition, other means which facilitate the transformation from STM to LTM are simplification and elaboration. When learnt verbal material is reduced to simple figures and symbols or compressed to abbreviated forms, it could be retained for a longer time. Take the counting example again. Suppose the last number was 144 and this can be reduced to 12 . In the same way, names of the organisations, projects, etc. are reduced to abbreviations. If the whole name has to be recalled, one spends some time splitting the abbreviation and organising the whole name. Yet another way to transfer STM to LTM is by elaborating, which means that the material has to be elaborated by associating it with other material. Perhaps, you may elaborate 144 by associating it with the telephone number of friends or your own bank account number. You may also convert it into alphabets which correspond to the number like ADD or words like Anand is a dirty dog, or Akshit is a dance director and so on.

Thus, transformation of material into long-term memory is done in order to retain it for a longer time and make it relatively permanent. Information stored in this stage is highly organized because it has been rehearsed, simplified or elaborated and categorized under the label of permanently remembered experiences and may be readily available when the need arises.

EPISODIC AND SEMANTIC MEMORY

William James' concepts of primary and secondary memory were transfigured by Endel Tulving to episodic memory and semantic memory. Episodic memory is said to be the store of the autobiographical events in the life of the individual and is organised according to the time, space and other qualities of the specific event or events. What is happening to you now, that of which you are conscious is the reflection of what is being stored in primary and also the current content of the episodic memory. For example, if you come back and narrate about an accident you have witnessed, it is episodic memory. What one can infer from this narration is the underlying process - the episodic memory.

SEMANTIC MEMORY

Semantic memory on the other hand, stores a collection of relationships between events which may or may not have passed through episodic memory but stores the collection of relationships between events. In other words, semantic memory includes the organised knowledge we have about language, i.e. words and other verbal symbols, their memory and the relations between them, rules, formulae and the manipulation of these symbols, concepts and relations. Consider the same example mentioned earlier - while narrating the accident, one has to make use of specific words to describe which vehicles collided, (whether it is a lorry, Fiat, Ambasador or some other vehicles), with what speed they were travelling, (usually in terms of kilometres per hour), who broke the rules, whether the lorry-driver wanted to overtake the car or vice versa and so on.

Episodic memory is autobiographical and more personal and, therefore differs from one individual to another because their experiences are different. However, the semantic memory system is such that it has to make use of language or manipulate words on the basis of accepted rules. Semantic memory is more or less public and the memory of one person contains roughly the same sort of information as the other, though the pattern of organization may differ. For instance, if two individuals have visited Kanyakumari, their episodic memories may differ because of their experience. But both will know what the speciality of the place is i.e. how far away the rock-cut temple is built, why it was built, what is the significance of sand, sea, sunset, sunrise, etc. According to Tulving's model, input to semantic memory is through episodic memory and each instance of the use of semantic memory constitutes an entry into episodic memory.

PROCEDURAL MEMORY

Sometimes, the term procedural memory is also used in addition to the terms of episodic memory and semantic memory.

This is also known as skill memory. Skill memory mainly involves how to do things in a complex operation. For example, when one is driving a car or a scooter, this involves many activities to be carried out in a sequence. In fact, there are many activities which involve a retrieval of learnt and stored up information and this happens in an automatic and unconscious manner.

While we have discussed three types of memory, episodic, semantic, and procedural, there are many activities involved in all these. For example, if we are playing a chess game, this involves semantic memory, in the form of what the situation now is in terms of scores — semantic memory, perhaps, remembering the kinds of moods one may have had in the past-episodic memory and of course, knowing the rules of the game and other procedures which constitute procedural memory. In view of this, many of our actions involve more than one type of memory. Such a situation has led some psychologists to question whether one should make a distinction at all among the three categories of memory.

Psychologists working in this area felt the need to explore further, especially semantic memory due to its richness and relevance to human memory. Some of the models postulated to explain semantic memory are considered briefly in the following pages.

HIERARCHICAL NETWORK MODEL OF SEMANTIC MEMORY

This model of semantic memory was postulated by Allan Collins and Ross Quillian. They suggested that items stored in semantic memory are connected by links in a huge network. All human knowledge, knowledge of objects, events, persons, concepts, etc. are organised into a hierarchy arranged into two sets. The two sets are - superordinate and subordinate sets with their properties or attributes stored. These properties are logically related and hierarchically organized. The following illustration

explains the relationship between the sets - super ordinate for dog is an animal, but it is a mammal too; belongs to a group of domesticated animals, a quadruped; belongs to a category of alsatian, hound, etc. Let us look at Collins and Quillian study as an example for a better understanding of this model.

In this hierarchically organised structure one can see that the superordinate of canary is bird, of shark is fish and the superordinate of fish is animal. One can notice further that a property characterising a particular class of things is assumed to be stored only at the place in the hierarchy that corresponds to that class. This assumption forms the basis of the cognitive economy. For example, a property that characterises all types of fish (the fact that they have gills and can swim) is stored only at the level of fish. It should be noted that gills and other such features are not stored again with the different types of fish (salmon, shark, etc.) even though they have gills. Similarly, a bird which is the superordinate of canary is an animal. Specific properties are stored only at appropriate levels in the hierarchy.

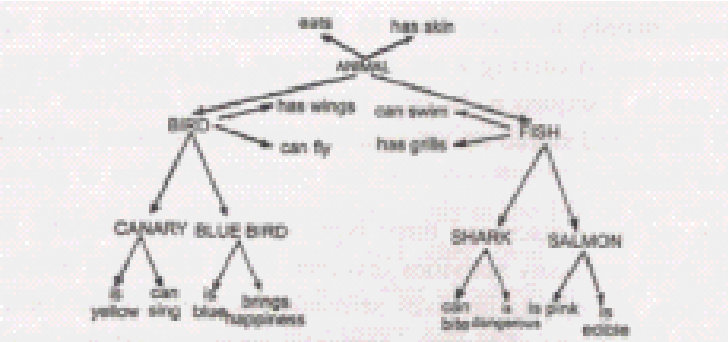


FIG. 10.7 *Collins and Quillian's model: a portion of hierarchically organised memory structure*

Given this hypothesised network structure, Collins and the Quillian's next task was to determine how information is retrieved from the network. To answer this question an experiment was carried out in which subjects were asked to answer 'yes' or'no' to simple questions. Consider, for example, the following questions about canaries:

1. Does a canary eat ?
2. Does a canary fly ?
3. Is a canary yellow?

The three questions mentioned above may be challenged by the semantic level at which the information needed to answer them is stored. Consider the first question, “Does a canary eat?” The information “eats” is stored at the level of animal, two levels away from canary. Likewise, the information has “wings” and is “yellow” (needed to answer the second and third questions) are stored at one and zero levels away from canary, respectively.

The major point of interest in this model of Collins and Quillian was the reaction-time or time taken to respond to the questions. Results of the experiment revealed that with the increasing level of information it takes increasing amounts of time to retrieve the information. Their explanation about this is as follows: in order to answer the third question, the subject must first enter the level in memory that corresponds to ‘canary’ and here find the information that canaries are yellow. The question is, therefore, answered relatively fast. To answer the second question the subject still enters the memory level that corresponds to ‘canary’ but does nof find any information at that level concerning whether or not canaries fly. However, the subject moves up the hierarchy to the level where information about birds is stored and there finds that birds fly. This is done by combining the information that canaries are birds and that birds fly and then the question can be answered. Due to the extra step of moving up the hierarchy, question two takes somewhat longer to answer than question three. The first question takes even longer for the same sort of reason. To answer question one, the subject cannot use any of the information that is stored at either the level of ‘canary’ or ‘bird’ but must move up to an additional level in the hierarchy to ‘animal’. Thus, it was concluded that, because a canary is a bird and a bird is an animal and animals eat, the canary must eat

too. Therefore, the reason why some questions take longer to answer than others is that some questions require more travelling in our memory from level to level in the semantic hierarchy.

Using a similar rationale Collins and Quillian predicted that it takes less time to answer "is a canary a bird?" than to answer "ls a canary an animal?" We see in the figure that to answer the latter question, a subject must move up two levels from canary to animal, whereas to answer the former question, the subject must move up only one level. It was revealed that on an average, people take about 75 milli-seconds longer to answer the question, "Does a canary eat?" than to answer, "Does a canary fly?" and about 75 milli-seconds longer to answer the question about flying than to answer, "ls a canary yellow?"

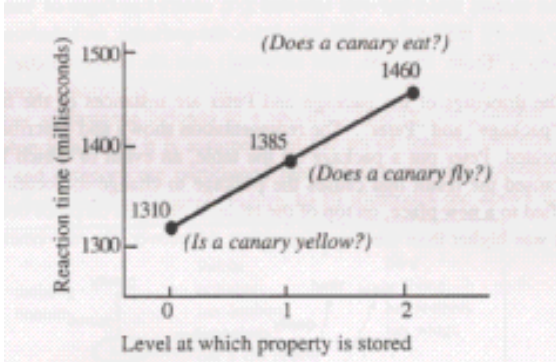


FIG. 10.8 *Graphical representation of travelling from one level of memory to another in the semantic hierarchy*

ACTIVE STRUCTURAL NETWORK - MODEL OF SEMANTIC MEMORY

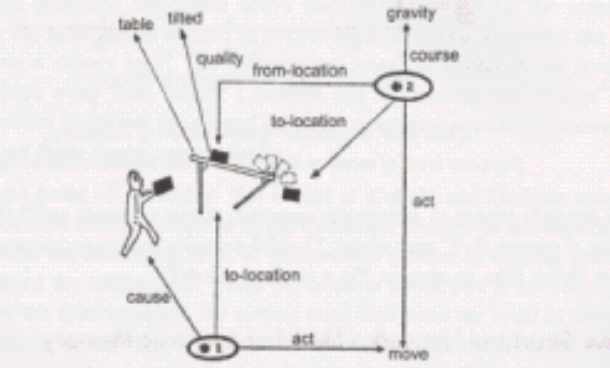
The active structural network model postulated by Norman and Lindsy can be understood by their analysis of two simple sentences. Let us now see how they go about explaining it. Peter put the package on the table. Because it wasn't level, it slid off.

These sentences refer to objects, person and events. Figure 10.9 shows the diagrammatic sketch representing information in a semantic network. This network consists of information

expanded in terms of events, instances of the movements involved or modes of their relations, the direction of the relationship, etc. This elaborate network representation is said to form the basis of human memory.

Let us consider the figure for a moment. The basic conceptual information shows that Peter caused the package to move from its earlier location to the top of the table, and that gravity was the causal agent that then acted upon the package causing it to move from the table top to the floor. The first movement is represented by a node, the oval numbered. The oval (or words in the figure) are called relations. The relations show how the different node structures in the figure are related to one another. Thus, looking at the node we see that it represents an instance of the act of 'move'. This particular instance of 'move' has its cause - Peter (shown diagrammatically) and the object being moved is package (again shown diagrammatically). The location to which the moved object is placed is the table. The second node, the oval labelled 2, is another instance of 'move'. Here the cause is gravity, the object is the same, i.e. the package, and the movement takes place from a 'From' location, (the table-top) to a 'To' location (the floor). The drawings of the package and Peter are instances of the nodes that are named "package" and "Peter". The representation shown and described can further be elaborated. Peter put a package on the table, an event of which Peter was the agent, caused the result that causes the package to change its location from place unspecified to a new place, on top of the table. It changed its place because the first position was higher than the second position. Moreover, the movement was caused by the force of gravity. In a similar fashion detailed analysis can be carried on and on. But the conceptual network presented here is assumed to be sufficient enough to give us an idea about how words and events create relationships, concepts, etc. and form a complex network. Thus, one can see that this model of semantic memory conceives of human memory as a giant network of interconnected nodes,

and these nodes are assumed to correspond to individual concepts, ideas, or events in the system.



'Active structural network' showing the concepts and events that underlie the sentences "Peter put the package on the table" & "Because it wasn't level, it slid off." The two nodes labeled "1&2" are instances of the movemtns involved, the arrows indicate relations. The label on an arrow specifies the type of relation, and the direction in which that relation is to be interpreted.

FIG. 10.9 *Active structural network model of Norman and Lindsy*

FEATURE-COMPARISON MODEL OF SEMANTIC MEMORY

E.E. Smith, E.J. Shoben and L.J. Rips postulated a theory in which emphasis was laid on semantic features. Their assumption was that there are two distinct types of features. First, there are those features which are essential aspects of the item's meaning. These are known as defining features. The second type of features do not form any part of the item's definition but are nonetheless descriptive of the item and are referred to as characteristic features. For instance, if we take the word Robin, there are some features true to Robins, such as that they are 'living', have 'feathers', have 'wings' and have 'red-breasts'. All these are defining features. Other features, however, may be associated with robins, but they are not necessary to define a robin. These include features such as 'like to perch on trees', 'undomesticated', 'harmless' and 'smallish'. In situations where a subject must decide whether an instance belongs to a specific category (for example, deciding whether a robin is a bird), it is assumed that the set of features corresponding to the instance and category are partitioned into the two sub-sets corresponding to defining and characteristic features.

Now this process of verifying whether an instance belongs to a category, i.e. in this case 'is a robin a bird?' is assumed to be accomplished in two major stages as given.

The first stage involves a comparison of both the defining and the characteristic features of the instance and the category to determine the degree to which the two sets of features are similar. If there is a high degree of correspondence between the instance features and the category features, the subject says "yes" immediately. If the two sets of features have very little correspondence (low similarity), the subject can say 'no' immediately. However, if there is an intermediate level of similarity between the features of the instance and the features of the category, then a second stage is needed before the subject can reach a decision. In the second stage, the subject compares only the defining features of instance and then a 'yes' response is made, otherwise the subject says 'no'.

Smith et al. extended their model further by including the concept called typicality effect. When a subject is asked to verify whether an instance belongs to a category, say birds, one is consistently faster in verifying some instances, for example, robin, canary, than chicken. The faster instances are those that are judged by other independent subjects to be more typical of the category. If the instance to be verified is highly typical of the category, the two share a large number of features, both defining and characteristic. When it is discovered during stage one that the instance and category have largely overlapping features, the subject can make an immediate response without executing stage two. For atypical instances in contrast there is not much overlap in terms of the characteristic features. Stage two must, therefore, be executed and response-time is accordingly longer.

Though these models have been built on highly scientific lines with detailed analysis, they are not free from certain limiting

factors. Rips Shoben and Smith criticizing Collins and Quillian pointed out that most of the college students know what a mammal is and if we add this concept to a hypothetical network that contains collie (a dog of specific breed), dog and animal, it is placed between dog and animal. In a semantic hierarchy, mammal is closer than animal to either dog or to some particular type or breed of dog (for example, collie). According to the Collins and Quillian model a person should answer the question "Is a collie a mammal?" faster than the question: "Is a collie an animal?" They found that people do not react as predicted by Collins and Quillian. Similarly, people take longer to answer the question "Is a potato a root?" even though vegetable is logically closer to potato in a semantic hierarchy.

The concept of cognitive economy was criticised by Conrad. She simply asked subjects to describe a canary as a bird, an animal and so on. She then tabulated the frequency with which various properties were mentioned. It turned out that the properties frequently associated with canary (such as the fact that they are yellow) were the properties presumed by Collins and Quillian to be stored directly at the canary node whereas the properties that Conrad found to be less frequent were presumed by Collins and Quillian to be stored with bird or with animal. She concluded that property frequency rather than the hierarchical distance determines the retrieval-time. The active structural network model has been criticised on the grounds that it expresses semantic memory through a gigantic network which is so expansive that the underlying conceptual framework cannot be presented in a representational system. Collins' criticism against the feature comparison model is that the distinction between defining and characteristic features poses an inherent difficulty - there is no feature that is absolutely

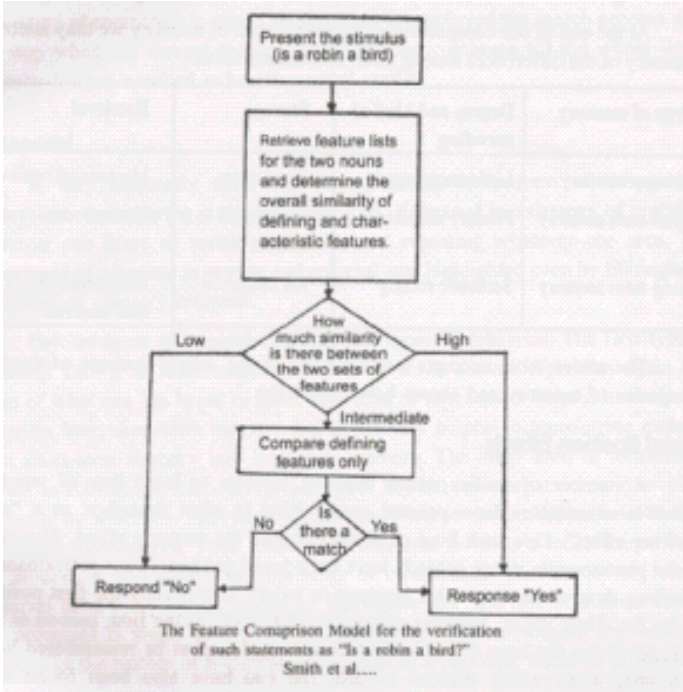


FIG. 10.11 *Schematic diagram of features comparison model*

necessary to define something. For example, if a person removes the wings of a bird, it does not cease to be a bird. If the feathers are plucked from a robin, it does not stop being a robin. Furthermore, people do not appear to be able to make consistent decisions as to whether a feature is defining or characteristic. Is "having four legs" a defining feature of tables? What if you see a table-like object with only three legs? Do you still call it a table? Smith and his co-workers realised the meaning underlying the questions but continued to maintain this artificial distinction between defining and characteristic features. With all these loopholes, we still see the contribution of these models to various fields of human and material world as something incredible. We will learn about their impact later in this chapter. There are a few other models like the Human Associative Model propounded by Anderson and Bruner. These were felt to be too complicated for inclusion here.

COMPARISON OF SENSORY MEMORY, SHORT-TERM MEMORY AND LONG-TERM MEMORY

At the end of our comparison of the three types of memory we may attempt a summary of the differences among them in a tabular form.

Type of memory	Degree and kind of encoding	Storage	Retrieval
Sensory memory	Little encoding	Short term	Mechanical retrieval
Short term memory	Primary acoustic	Can retain 5 to 9 chunks	General scan
Long term memory	Semantic coding	No limitation	Integration of new material

The above table attempts a comparison of the salient features of the three categories of memory and shows how they differ.

SERIAL POSITION EFFECTS

A number of studies which required subjects to learn lists of words or syllables or numbers have pointed out to what is often described as a “serial position effect”. One such kind of effect is called the primacy effect. This refers to the phenomenon where subjects have been found to show better performance in recalling those units or chunks, numbers or words that occupy the first positions in the list. Thus, digits, numbers or words which occur as the first, second or third in order in the list have a primacy effect and are found to be remembered better. Similarly, items which occured towards the end have also been found to be remembered better. This effect is known as recency effect. Thus, the first few elements and the last few elements tend to be remembered better. Psychologists explain this on the basis that first few units are rehearsed more frequently, thus enjoying an advantage, while the last few items had the advantage Qf being fresh in the short-term memory.

Even when a person holds information in short-term memory very often the retreival is not instantaneous and it takes some time. One psychologist, Sternberg on the basis of his research, describes that under these conditions of short-term memory people engage in two types of search. The first one is called parallel search. In this kind of search, the person searches and examines all the elements in short-term memory, at the same time and simultaneously. On the other hand, the other type of search known as serial search involves examination of one piece in retrieval is due to interference from subsequently learnt new material would argue that if there were no interfering materials, earlier stored materials in long-term memory would stay for ever. The fact that certain memories can be recalled after decades of their registration lends some support to such a view.

Notwithstanding the controversy arising from the divergence of approaches it has been shown that retrieval is facilitated by certain clues. In this context, one may refer to what is known as Encoding Specificity Principle. This means that retrieval is likely to be better, the greater the degree to which one is able to reach out for the information that was registered and encoded at the time of original learning.

Yet another principle known as Context Dependence Principle holds that retrieval will be more effective if the situation under which recall is made resembles the situation under which original learning took place. The greater the degree of simlilarity between the situation and conditions of original learning and that of recall, the more effective will be the memory. Thus very often it has been found that people giving evidence recall evidence if they are taken to the actual sight of an accident or crime. Here, it may be seen that what comes into operation is more of recognititon than recall.

As a counterpart of Context Dependence which refers to external conditions, psychologists also speak of State Dependence which refers to the degree of similarity between the condition of the original experience and the condition of recall in terms of the internal psychological conditions of the person. Thus, when we meet an old friend after a long time and engage in pleasantaries we recall similar experiences which we had decades ago. Similarly experiments by Bower have shown that when we are in a negative state, for example, in a state of mourning more negative elements from one's memory are likely to be retrieved. A number of studies on people suffering from affective disorders or mood disorders, which were traditionally known as Manic Depressive Disorders have shown that when the patient is in an exalted state more pleasant and successful memories are recalled and while he is in a depressed mood unpleasant memories are remembered. Such findings have been reported by Henry, Weingartner & Murphy.

Another interesting feature of retrieval in long-term memory is what is usually referred to as "feeling of knowing experience". Hart, Nelson and others refer to such a feeling on the part of subjects and report the findings of certain studies. In their studies they asked the subjects to guess how many correct answers they will be able to recognise if they are provided with other alternatives, whenever recall failed. The result showed that the subjects guessed the possibility of success correctly to the extent of 70% in predicting their ability to recognise the correct answer.

MEMORY-RELATED PHENOMENA

So far in this chapter, we have been concerned with an examination of the physiological and psychological processes involved in memory. Some of the theories advanced to explain the process of retention and remembering were considered. Our discussion of these theories showed that each theory has its own merits and disadvantages. While our discussions could have led the reader to the uneasy conclusion that none of the theories is

fully adequate, nevertheless he would have come to appreciate the various aspects of the problem of explaining retention and remembering.

In this section, we proceed to examine some of the phenomena related to the process of remembering. These phenomena are actually remembering phenomena but are different from the normal process of remembering. Examination of such phenomena is necessary to enable us to arrive at a more complete understanding of the phenomenon of remembering.

TIP OF THE TONGUE PHENOMENON (TOT)

The reader would have surely undergone an experience, which would have made him scratch his head, pull his hair, swear and, on the whole, feel frustrated for not being able to remember a word, name, etc. of which he is fully aware. We often describe this experience as the right word or name being on the tip of the tongue but not rolling out. Thus, tip of the tongue, or popularly known as TOT, is the state which involves a failure to recall a word of which one has complete knowledge, and this knowledge is evident through successful recall or recognition which occurs eventually. When the whole procedure of recollecting a word is analysed, we realise how close we are to the right word, how we tend to pick up words which resemble (in content, i.e. in meaning, number of syllables, initial letters, etc.) the word which we are trying to recollect. Brown and McNeil devised an experimental technique for inducing TOT states in their subjects. The procedure was simple; the subjects were presented with the definition of an uncommon English word and were asked to supply the word. In a preliminary experiment on nine subjects, the procedure appeared to be successful. To quote Brown and McNeil, "In 57 instances a subject was in fact 'seized' by a TOT state. The signs of it were unmistakable; he would appear to be in a mild torment, something like the brink of a sneeze, and if he found the word his relief was considerable." While searching for the target, the subject spoke

out all the words that came to his mind. He volunteered the information that some of them resembled in sound but not in meaning, while others, he was sure, were similar in meaning but not in sound. The experimenter intruded on the subject's agony with two questions: (a) How many syllables has the target word? (b) What is its first letter?' Answers to the first question were correct in 47 per cent of all cases and answers to the second were correct in 51 per cent of the cases.

META MEMORY

Psychologists are of the view that a persons ability to remember and perform memory tasks, can be improved by knowledge or the information which an individual has about the nature of memory and how it works. This knowledge and information possessed by an individual about the nature of memory, the principles governing it and the factors that influence memory is known as meta memory. Some psychologists like Flavell describe three such kinds of knowledge.

In the first instance meta memory involves a knowledge and awareness of the strengths and weaknesses of one's own memory. Very young children are often devoid of such knowledge. They probably know that it is not easy to remember all the items they learn and also perhaps that noise and other distractions affect their memory. Beyond this, most of them are often confident that they can remember a lot. It is only later when they come to school age that they begin to understand that there are limitations to what they can remember and that many factors affect memory. For example, some children begin to go on writing down immediately what they hear and are expected to remember. Some others try to keep on repeating them orally.

The next type of knowledge relates to the different kinds of strategies that can be adopted to remember different kinds of tasks. Thus, if one were to answer an objective test, short answer items

require recall, while multiple choice items, while they may demand a little of recall, depend more on one's ability to recognise.

A third type of knowledge relates to an awareness of the methods and strategies that can be adopted for remembering effectively newly received information. There can be several strategies like rehearsal. Children learn to use this during the school years and go on varying its form as they grow older. If the material to be remembered is short, then rote rehearsal is adequate. Young children use this. But as they grow older and are called upon to remember material which is longer, they do not depend on rote rehearsing. They try to club certain parts together or categorise them or contextualise them and adopt varied strategies. These variations in strategy play an important role in determining the amount of material remembered. Thus children and even adults can be trained to adopt effective strategies for improving memory. Very often, children with learning disabilities, or mental retardation can be made to improve their performance by training them to use effective strategies. Psychologists have evolved a number of training programmes to suit different categories of people, students, executives, older individuals and others. While such learning programmes and even meta memory knowledge can be helpful, it should be clearly pointed out that the extent to which we can remember, to a large extent depends on how well we learn, and whether we have employed effective strategies of learning. In fact there are some psychologists who hold the view that what passes for memory failure or failure to remember, is often in reality learning failure.

MNEMONICS

When a nursery teacher is trying to teach a child a rhyme, say, One, two buckle my shoe,
Three, four shut the door
Five, six pick up the sticks,

Seven, eight lay them straight,
Nine, ten a big fat hen.

What she is trying to do is to associate numbers with simple rhyming words so that the child can remember the numbers in sequence by mere association. When children are taught in the form of a rhyme with a tune added to it, the idea is not just to make them retrieve but to make the retention more permanent. Thus, we see that mnemonics are methods of organizing material in ways that help us to remember quickly and easily.

Mnemonic devices range from tying a knot to handkerchief, to rhymes, tunes, cueing, categorising, reducing, elaborating, etc. as mentioned in the section on long-term memory. Mnemonics may be verbal, i.e. by simply associating numbers with words or other symbols as we have seen in the first rhyme.

Another method often employed is one in which visual imagery is used. The visual imagery mnemonic system, reported to have been used extensively in classical times by orators who wished to memorise a lengthy speech, is known as the method of loci. This involves first memorising a sequence of locations - for example, various pieces of furniture or any other objects from one's own house. Each item to be remembered is visualised in one of these locations. Supposing you have to remember your shopping list, say which consists of cheese, tomatoes, mangoes, shampoo, etc. you may visualise them in the following manner - the drawing room covered with cheese packets instead of carpet, tomatoes covering the adjacent room, mangoes on the dining table and the refrigerator full of shampoo bottles, etc. Later, in order to recall the items, simply imagine yourself entering the house and visiting these locations. In FIG. 10.12 is given a list of words which are presented pictorially. Ask your friends to give it a glance and see how many words they can recall. You may be surprised to see them recalling more than 75 per cent of the items because meaning is associated or built into these words and made explicit.

PHOTOGRAPHIC MEMORY

Photographic memory, sometimes referred to as eidetic irtlagery, though rare, does occur. The visual imagery of some people seems to be more detailed and more persistent than what we usually see in normal human beings. Eidetic children typically report their images as occurring in front of their eyes, while children with photographic memory refer to memory images as being in their heads. For instance, Gummerman and Gray reported the case of a nineteen-year old college student with remarkable ability to remember pictorial material. Having viewed a complex picture for thirty seconds, she could subsequently describe it accurately and in great detail without moving her eyes in order to scan the image, with eyes open or closed and with constant or varied fixation. This was found out after testing her with hundreds of pictures. We will not go into the details as to how and why this memory occurs. For additional information reference may be made to the chapter on thinking.

MEMORY IMPAIRMENTS

We have mentioned earlier that in motivated forgetting or amnesia, the loss of memory for previous experiences can occur due to certain psychological factors like stress, emotional crises, etc. However, amnesia may also occur due to organic causes such as brain damage resulting from tumours, infection, accidents, drugs, etc. Amne sia, resulting out of such conditions is of two types, retrograde amnesia and antero grade amnesia. A person with retrograde amnesia forgets everything which occurred prior td the accident or trauma. He may have no recollection of the past, like having gone to school, having taken up a profession, being married, etc. Such memory losses, however, may be recovered eventually with medical care but sometimes the loss may be permanent.

Anterograde amnesia results when an individual is unable to recall events that occurred after the accident or trauma. Here,

information is not registered and retained in the memory in a way that facilitates its retrieval when the individual wishes to retrieve it. Talland reported a case which is a good example of anterograde amnesia - an elderly man who thought of himself as still being a star athlete in high-school and who used to look forward to play quarter-back on the football team once released from the hospital.

REMINISCENCE

It is surprising to see that, at times, after learning some material perfectly when you try to recall it immediately you realise that the mind is blank and you are unable to recall a single word or letter of the material. This is experienced especially before entering the examination hall (the reason in this case may be tension). But you also must have experienced that at times you are able to remember incompletely learnt material after an interval without practice but not immediately. This phenomenon of recollecting learnt material without practice and after a period or interval is called reminiscence.

HYPNOSIS AND MEMORY

Hypnosis is described as a trance-like state brought about through suggestion. In this state the individual is made to relax the muscles or the whole body, sleep and carry out various acts under the control of the hypnotist. This method is often used as a therapeutic technique in psychotherapy to explore the memory processes and bring to the fore the forgotten material (the material which is repressed where the forgetting is assumed to be apparent and not actual). It is a well-demonstrated fact that recall of buried memories, such as traumatic experiences that have been repressed from consciousness, may be brought about under hypnosis. To begin with, this technique was occasionally used in treating combat-exhaustion cases during World War II. Under hypnosis the amnesic soldier could relive his battle experiences, thus, releasing the emotional tensions associated with it. Similarly, traumas resulting due to emotional, sexual and other noncombat

conditions were treated with hypnosis. An important phenomenon relating to memory recall and hypnosis is age regression which means that under certain therapeutic conditions the subject may be told that he is now a five-year old child and will subsequently have to act, talk and think very much as he did at the age of five years. Under such suggestions characteristics such as handwriting, talking, etc. will become increasingly childish. By making them regress successively to younger ages, the therapist brings to light the traumatic experiences that precipitated the illness. Here again, the idea is that the traumatic experience may be relived, apart from bringing the causes of the trauma to consciousness. It has also been demonstrated how, under hypnosis, forgotten memories such as books read, TV and films seen, ,radio programmes heard, incidents witnessed, conversations which had taken place, etc., can be successfully recollected. Thus, we see that under hypnosis the person is made to go deep into memory and retrieve certain experiences which are very much alive, though appear to have been forgotten.

PARANORMAL MEMORY

The reader has learnt how under hypnosis it is possible to make a person recede chronologically and be madeto relive past experiences. This is not the only interesting aspect of memory; there is yet another fascinating phenomenon which reflects an individual's regression not only in time but in space and matter (from one place and body to another) and recall his experiences. This unusual memory of previous life or lives is popularly known as reincarnation.

Instances of reincarnation vary greatly both in the quality of the subject's utterances and in the richness of the memories of previous lives which they talk about. It was found that some children made only three to four different statements about their previous lives but others remembered about sixty to seventy separate items pertaining to different details in the life.

In a typical case of reincarnation, a child between the age of two and four years or sometimes older begins to narrate details of a previous life that it claims to have lived. The behaviour is unusual to both the child and its family. In most instances, it is found to correspond with what other informants say concerning the behaviour of the person about whom the subject (child) has been talking about, if such a person is traced. Very often, the child asks or even clamours to be taken to the place where he or she lived before and shows marked concern for the people left there.

Rich and surprising information about this phenomenon comes from the studies conducted by parapsychologists from the University of Virginia headed by the leading figure, Ian Stevenson. They collected nearly one thousand and six hundred cases of reincarnation. The cases were collected from various countries like Sri Lanka, India, other South-East Asian countries and a few countries of South America. Incidents of reincarnation are said to be more in certain cultures which believe in the concept that human beings consist of two separable components, a physical body and psychical entity or soul. At the death of the physical body, the soul persists and after a variable interval becomes associated with a new physical body. And this happens to be one of the basic concepts of Hindu and Buddhistic philosophies. Though, a large number of reincarnation cases have been reported from different parts of the world where the belief in reincarnation is held by the majority of the population, cases have also been reported and investigated in cultures where a majority of the population are uninformed about reincarnation, uninterested in it or are actually opposed to the belief in it. In recent years, more cases have been found in such groups which include the Christians of Lebanon and Sri Lanka, the Sunni Muslims of India and the Christians of Europe, the United States and Canada. Thus, we see that this kind of memory, though rare, is possible but much more additional evidence is required to draw any conclusions about it.

One remarkable case of reincarnation was recorded in Delhi, where a young Hindu girl of eight- and-a-half years of age was successful in tracing the whereabouts of her old house and the relations of her past life. The story as personally verified by a well-known member of the Theosophical Society appeared in the Theosophy in India in January-February, 1936.

The girl for the first three years of her childhood did not talk. She appeared gloomy and contemplative. From her fourth year she began to speak about her home at Mathura, a place about 100 miles away from Delhi, but the parents and relatives paid little heed. The child's teacher pronounced her quite intelligent. The girl was in the habit of saying that in her old house she had plenty of sweets, fruits and money. She even described in detail the business of her husband, the location of the house, its plan and the colouring of its walls. She referred to her relations and when her husband was mentioned she used to bend her head in the customary gesture of respect. Although she gave the name of her brother-in-law she would not utter that of her husband as is customary in India. She stated that she had been the mother of two children, the first of whom died while she was living, while she herself passed away from her last physical Itfe ten days after the birth of her second child, a son. Pressure was brought to bear upon her to give the name of her husband to enable the family to make further investigations. Her girl-friends with whom she played were asked to put the question to her and for one of them she wrote the name on a slip of paper as K. C. of Mathura. This information had to be confirmed and during the interval she continuously asked her parents to take her to Mathura, her old home. Once, during a lesson, she began to cry and begged her teacher to take her to Mathura.

When K. C. was informed about this, he replied that the incidences related by the girl were correct and suggested a meeting with his brother who was then in Delhi on business. The girl at

once identified him as her husband's brother and from the questions and answers which followed, it was found that the detailed description of the house and the circumstances of the death of Mr KG. 's wife were entirely correct. The girl also showed keen interest to proceed to Mathura with her brother-in-law (of the past life).

Mr K. C. was naturally interested in the case and a little later he came down to Delhi from Mathura with his son (born to the girl in her past life) to see the young lady for himself As soon as she saw him she burst into tears and bowed her head in respect. When questioned about the identity of the two persons, she did not hesitate to say that one was her husband and the other was her son. She gave details of her husband's likes and dislikes and accurately described the moles and other marks on his body. Mr. K. C. confirmed every statement of the girl, to the great surprise of the friends and relations assembled in the house. The girl and the boy at once became great friends and seemed very happy together Very strong evidence was thus given that the girl must have been MrK C. 's former wife, even though she had reincarnated two and a half years after the passing away of her previous physical body. Further evidence, if not proof was given that the girl was indeed a reincarnation of the former wife. Before the groups parted, the girl was taken for a drive through New Delhi to make the parting less shocking and sudden. Just before she left for the ride she approached her mother and gave instructions that certain dishes were to be prepared for the guests and that these were to be served before their final departure. On returning, K. C. was surprised and, to some extent, shocked to see that his old favourite dishes which his deceased w4fe used to prepare for him were placed before him. Mr. K. C. had to admit, as the young girl had claimed, he and his wife were a loving pair and the wife was greatly devoted to him.

CHAPTER - IX
THINKING AND ATTENTION

Thought or the capacity to think was at one time held to be not only the most distinctive characteristic of human nature but also the one which most clearly distinguished the human being from other creatures. The great philosopher Descartes had said, “I think. So I exist”, implying that thought is the very essence of human existence. Thinking, therefore, represents the most complex and subtle of psychological processes. In the early days of psychology the capacity to think was regarded as a unitary and innat faculty along with intelligence, memory, etc. It was believed that thinking was a t process not reducible to any other psychological elements. It was only later when Wundt, Titchener and others started their experimental work on different psychological processes, that thought processes too came in for experimental investigation. Structural psychology, under the leadership of Wundt and his followers, approached thinking as a part of conscious experience and stated that thinking could be reduced to images, just as perception could be reduced to sensations, and emotions to feelings. According to structural psychology, therefore, thinking essentially involved the formation of images and the subsequent associations among them.

Although subsequent researches have seriously questioned this view, even today thinking or thought behaviour is still linked up with the concept of images. A serious controversy in this context raged for sometime and came to be known as the imageless-thought controversy. A group of psychologists like Kulpe, Ach, Watt, and others reported the findings of certain experiments. In these experiments, the subjects were given different tasks like solving puzzles, mathematical problems, etc, which necessarily involved thinking. When the subjects gave their introspective reports there was no evidence for the occurrence of images. These findings generated the imageless-thought

controversy. Today this controversy is of purely historical importance. Experimental work in the area of thinking has not only thrown up a number of interesting findings but also changed the very concept and scope of thinking or the thought processes. Today, it is known that there are different types and levels of thinking and, therefore thought is not a simple form of activity. We will examine some of the issues and problems related to thinking in this chapter.

IMAGINATION

Imagination is supposed to be the simplest and most basic form of thinking. Let us assume that a man, one night after a heavy meal, sits at the window of his bedroom and keeps looking at the full moon outside. Several objects and impressions appear before his eyes in a random and unconnected manner. This type of activity is known as imagination and occurs without any specific effort. Imagination, therefore, is a spontaneous process which occurs when an individual is doing nothing in particular, is not responding to any clearly identifiable stimulus and is relatively passive. All that really happens is that he experiences different sensory impressions in the absence of corresponding sensory stimulations in a random and disjointed manner. He appears to 'hear' and 'smell' things, which otherwise form part of his daily experiences. This shows one more characteristic of imagination. It is actually the experiencing of earlier sensory experiences in the absence of the relevant stimuli. Imagination, therefore, is based on one's past experiences.

The sensory experiences or impressions which occur in the absence of the relevant objects or stimuli are known as images. Any sensory experience having occurred once is capable of reappearing as an image. The face of a friend, the voice of one's mother, the smell of a flower, a pain in the body, in fact anything can occur as an image. We may, therefore, call images shadow sensations or perceptions.

Individuals differ with regard to the clarity and intensity of the images that they can experience. It is also possible that some individuals have a stronger capacity to experience visual images, others to experience auditory images, and so on. Thus, people show different types of image-dominance. In fact, years ago Francis Galton developed a questionnaire'to measure such individual differences. Images have been classified into a number of types. Most of our images belong to the category of memory images. This means that these images are the reappearances of some sensory experiences which have been experienced before. The voice of a friend, the face of your favourite film star, the smell of food you had once enjoyed eating, etc. belong to this category. Such memory images, though they are derived from original sensory experiences, are generally less clear and vivid compared to the original experiences. The reader has already learnt about after images while going through the chapter on sensations. These constitute another category of images. Though after-images are also based on sensory experiences, they are basically physiological in character and occur immediately after particular sensory experiences. They are not revived from memory. A third category of images are called verbal image or abstract image. These are symbolic in nature and are not purely sensory in character. They often tend to be abstract. Verbal images and abstract images are in many instances not dependent on memory or past sensory ekperience alone. They are often original and creative. Poets and writers make extensive use of verbal and abstract images, and so do philosophers, mathematicians and scientists. Verbal and abstract images are usually more complex than memory images and involve a greater degree of perceptual organisation and the active participation of intelligence and even of personality. They are more influenced by dynamic processes in the individual, particularly needs, motives etc. While memory images involve mainly a passive revival of past sensory experiences, abstract images are products of a more active process of psychological involvement and interaction.

Yet another type of images are known as eidetic images. These are very similar to memory images, the only difference being that these images are exactly identical in all details with the original sensory experience. Eidetic images are found more commonly among children than among adults. These images are almost photographic in nature. As already mentioned another way of classifying images is in terms of the particular sensory modality involved like auditory, visual, olfactory, etc.

IMAGINATION AND THINKING

It has already been pointed out that imagination represents a very simple and passive type of thought process. Normally, imagination occurs when we are relatively free and are not particularly directing our attention to any specific problem or issue. It is, in a way, a sort of idle activity. But when our psychological activity is directed towards a particular issue, object or person, the situation is different. A school child sitting at his desk and planning his studies for the next day's test or an army commander sitting in his barracks, looking at a field-map and working out strategies may look idle and as if he is not directing his attention to anything in particular. But, this is not true. He is implicitly or inwardly actively planning or worrying, estimating or calculating. This type of inner or implicit psychological activity centering around a particular problem or issue or object or even a person is known as thinking.

In this process of thinking, both imagination and images are involved. But the process of thinking is purposeful, relates to a problem or issue on hand and is, therefore, more organised. It involves a variety of experiences, perceptions, feelings, etc. Such thinking activity can again vary in intensity and focus. For example, a school child's thinking about a test is much more intense immediately before the test than a week earlier. This difference in intensity of thinking is usually described as reflecting different degrees of concentration. The more concentrated the thinking,

the more specific and clear is the object of thinking and the more selective it becomes. This also explains the concept of focus. It is this specificity of the object of thinking and its clear delineation which is known as focus. Thinking, therefore, involves a more active effort on the part of the individual. It is an implicit and inner process and is part of a process of adaptation or adjustment. In other words, thinking occurs whenever an individual perceives a problem or issue, which is significant, whereas imagination occurs in the absence of such things. While the former is a necessary activity the latter is often not immediately useful. Thinking involves responding to and interpreting elements in the envrionment and therefore is a cognitive process.

NATURE OF THINKING

As has already been mentioned, early philosophical psychologists tended to look upon thinking as a faculty or a primary mental ability. Subsequently the structuralistic school of psychology tended to look upon thinking as a combination of images. As psychology advanced as an experimental science, these views came to be questioned seriously. Reference has already been made to the imageless thought controversy.

John Watson, the leader of the school of behaviourism struck out on a totally different path. According to him thought or thinking was essentially motor in nature involving the movement of very fine muscles in the throat and laryngeal region. Watson said that thinking is nothing but silent talking or implicit speech. Thus, he more or less equated thought and language. He conducted a series of experiments to show that thinking activity involved movements of the same muscles as those involved in speech or language. However, these experiments were not conclusive and Watson's attempt to explain thinking as implicit muscular activity failed as miserably as the attempt of structural psychologists to explain thought as a combination of images. Subsequent researches and experiments in psychology have shown that the process of

thinking while involving images and muscular activity, involves much more, especially the activity of the cerebral cortex and the association areas. We will examine some of these aspects of thinking in the following paragraphs.

CONCRETE AND ABSTRACT THINKING

The thinking process is often classified into concrete and abstract. Now what is the difference between the two? Both thinking processes employ images. Concrete thinking generally involves the use of simple memory images and sensory images. Concrete thinking generally occurs in the presence of the agents or events, and subsequently this becomes a part of the store of memory images. In general, concrete thinking refers to a recall of past experience and knowledge in the form of concrete symbols, or in case of events, people or objects, in their direct form as perceived. Children mostly make use of concrete thinking.

Adults on the other hand show a different mode of thinking. Their thinking often involves objects, people and images, which they have not interacted with and also, even where the process involves past experience, abstract thinking enables the individual to extend the boundary of the thinking process, beyond what has been experienced. Again abstract thinking usually involves the use of verbal symbols and images, more than concrete memory images or sensory images. In fact abstract thinking involves much more of imagination than concrete thinking. Thus, it can be seen that language is a very essential tool in abstract thinking. Further, abstract thinking is a more active process, and refers to possibilities rather than actualities. For example, a person who is involved in the process of bringing about changes in the work practices in an organization, has to think what are the likely possibilities of his planning going wrong and the consequences thereof. While concrete thinking is controlled by a limited flow of the process of association, abstract thinking involves an unfettered flow of the process of association. Creative scientists and artists make

extensive use of abstract thinking and so also creative writers, and visionaries. In general one may say that as an individual grows, he or she becomes more capable of abstract thinking. Similarly, the greater the 'verbal ability' of an individual, the greater is the capacity for his or her abstract thinking. To a great extent, capacity for abstract thinking is also influenced by the level of intelligence of the person. Abstract thinking is essential when the 'thinking' process is related to a specific problem solving. An individual who is faced with the need for solving a problem makes use of 'abstract thinking' wherein he is able to organise and reorganise the different elements involved in the situation, and see what will be the consequences, if he takes recourse to a particular course of action or adopts a particular solution. Thus in a problem solving situation, abstract thinking involves what may be called "anticipatory and trial and error activity". Abstract thinking thus enables us to avoid costly trial and error attempts. While it has been mentioned that both artists and scientists employ abstract thinking there is a difference. The process of abstract thinking in the scientist is invariably directed towards finding an answer to one's intellectual question or solution to a problem. Similarly administrators, managers and others in responsible positions make use of "abstract thinking" for solving their problems.

In the case of artists, however, there is a difference. Abstract thinking in the case of the artist is not usually 'bounded' or 'restricted' by the need to find solution to a problem or answer to a question. It is more free, and often the driving force or motivation is to find a total expression of one's feelings, ideas, needs, expectations, hopes, failures and so on. The abstract thinking of the artist is more dependent on personal factors in the individual, unlike in the case of the scientist or planner or administrator. This does not mean that these two forms of abstract thinking are mutually exclusive. There have been instances where people have combined the two kinds of abstract thinking. The most outstanding example is that of Leonardo Da Vinci who was a great artist and

incidentally or accidentally also a scientist. Long before aeroplanes were thought of, he could visualise how they would be and presented pictures of the same.

GOLDSTEIN'S WORK

In the course of this discussion on the concept of abstract thinking it was mentioned that children in general are more concrete in their thinking and adults make use of abstract thinking. While this may be a general observation, this need to be always o. As already mentioned, the level of intelligence, education, language ability are all important factors. There have been child prodigies and artists who have shown a remarkable degree of capacity for abstract thinking compared to many adults.

A well-known psychiatrist and psychologist Kurt Goldstein who was involved in treating patients with serious mental disorders (known as schizophrenia), after a series of studies found that what differentiated them from normals was their much poorer ability for abstract thinking. The patients with schizophrenia were very concrete in their thinking. Further their thinking was also disorganised. Subsequently this has been confirmed by the observations of many others.

The student may also see a similarity between concrete thinking and field dependent perception on the one hand and abstract thinking and field independent perception on the other hand. We may also hazard a statement that concrete thinking involves more of crystallised intelligence, and abstract thinking more of fluid intelligence, in the words of Cattell. The student by now must have come to realise the important role played by abstract thinking in human life. Scientific discoveries, artistic creations and planning would not have been possible but for the crucial contributions of abstract thinking. In fact, one of the stated purposes of education is to cultivate the ability for abstract thinking. But how far our education has achieved this is anybody's

guess. Before we conclude, it must be pointed out that abstract thinking does not mean letting one's thought processes run riot. Abstract thinking is task or goal directed and is a controlled process while being free of the fetters affecting concrete thinking. As pointed out, it is very much influenced by a number of other factors including the richness and variety of one's experience. If one may go back to Spearman's Neogenesis and his analysis of cognitive processes or intellectual process, abstract thinking strives towards eduction of relations and new relations and correlates as different from concrete thinking, which is concerned with apprehension of experience, and to some extent eduction of relations.

THE PROCESS OF ASSOCIATION

As already mentioned, thinking differs from simple imagination in that it involves the organisation and integration of different types of images. An important part of this process of integration and organisation involves the associative process. The process of association enables the organisation of the images into different categories and relating them to each other. The study of association played a very crucial role in the development of psychology. The laws of association were formulated by Aristotle, Locke, Berkeley, Hume, Brown and others who enunciated the various principles by which ideas get related to each other in an individual's consciousness. Some of the well-known laws are similarity, contrast, proximity and contiguity. Through these processes of association a schema is formed. The associative processes involve an integration of memory and perceptual experience on the one hand and goal directed tendencies on the other. These integrative associative processes are very much dependent on the effective functioning of the association areas of the cerebral cortex.

FREE ASSOCIATION

Associative processes are of two types - free association and controlled association.

Free association involves the association of ideas purely on the basis of perceptual characteristics or sensory characteristics like similarity, proximity, etc. This type of associative process is evident in simple imagination, where one finds images following each other purely on the basis of sensory characteristics. Of course, Freudian psychoanalysis would dispute the existence of any type of association that is totally free and random. According to them, even such random chains of association are determined by certain unconscious motivation factors.

CONTROLLED ASSOCIATION

The other type of associative processes are known as controlled associations; these proceed in a specific direction. This direction is controlled by factors like goal expectations, mental set and other inner tendencies. The latter constitute the basic factors in the formation of the schema. Gestalt psychologists refer to these factors as determining tendencies which are responsible for giving a direction and pattern to thinking. A good example of the operation of such schema can be seen in the delusions of psychotic or severely maladjusted individuals. Here, all the thought processes are governed by certain basic inner tendencies which determine the structure and direction of the thought processes. The difference between normal thinking and delusive thinking is as follows: in the normal thinking process, the schema and perceptual realities interact actively and the schema retains its flexibility and undergoes changes when required by perceptual experiences. On the other hand, delusions show a fixity of the basic schema and the distortion of perceptual reality. Also the associative processes are distorted and influenced by the schema.

GESTALT PROPERTIES OF THOUGHT

Just as in the case of perception and remembering, the thinking process also shows evidence of moving towards maximum stability and clarity. Our thinking process normally moves in the direction of becoming clearer and stable. The same processes

which operate in transforming our perceptions and memories also operate here. The principles of Pragnaz and closure are found in operation in thinking too. This is quite understandable because thinking necessarily involves perceptual experiences and memory processes.

THINKING IN CHILDREN AND IN ADULTS

These characteristics of thinking become clearer if we compare the thinking process in children with those of adults. The thought processes of children are generally vague, unclear and are essentially centered around sensory images and characteristics. But, as the child grows older, this type of thinking gives way to more organised thoughts going beyond and cutting across sensory impressions and images. Elements in the thought process are more differentiated at the adult level. Inner tendencies and the emergence of a schema are found to be operative much more prominently in the adult than in the child. It is customary to refer to childhood thought process as primary. Such primary thinking tends to be vague and global with the thought process being undifferentiated and the element of focussing referred to earlier, being relatively absent.

A few other characteristics which from part of childhood thought are given below. Children very often tend to look upon external objects as being animated. Everything around them has a life or life similar to theirs. Trees, stones, doors all have a life. Here, one may see that this type of thinking is also found among people of certain simpler societies even today. A great deal of mythology is based on such animism or animistic thinking. Thus, in Indian mythology, mountains like the Himalayas, rivers like the Ganga and the Godavari are not only personified but raised to superhuman status. The point has been emphasized by Piaget, a leading psychologist.

A second characteristic of childhood thinking described is what is known as egocentricism. Egocentricism means a tendency to interpret events and experiences in terms of one's own inner conditions and needs. Piaget cites an interesting example: a young child was asked why the sun sets? Pat came the answer, "because Johnny must go to sleep." The child finds it difficult to differentiate between ego experiences and phenomena on the one hand and external objects and phenomena on the other. Yet another characteristic associated with childhood thinking or primary thinking is autism. In a way, autism is an extension of egocentricism. Whereas egocentricism shows a tendency to impose inner logic and experiences on the outer objects and experiences, autism is a little more primitive. Autism or autistic thinking reflects a total failure to distinguish between oneself and reality. The autistic child is one whose thought process shows a total absence of any distinction between the ego and the environment. The whole world is one world with no boundaries between what is oneself and what is not. Yet another characteristic. type of thinking is at times directed more by personal wishes than by objective or rational factors. This is called wishful thinking. The student must have heard the popular story of Cinderella.

Secondary thinking or adult thinking, on the other hand, involves a clear distinction between the ego and the object. Not only this, even the thought processes relating to one's own self and the external world show clear differentiations and distinctions. But these different elements are organised and integrated within the frame of a schematic structure. It may, therefore, be seen that the processes of thinking develop gradually and change from primary thinking to secondary thinking and adult thinking does not appear overnight.

THEORIES OF THE DEVELOPMENT OF THINKING

The process of the development of thinking has been studied by psychologists and a number of theories have been advanced. A few of them are briefly discussed here.

PIAGET'S THEORY

The Swiss psychologist, Jean Piaget, using his own children as subjects, devised ingenious and simple experiments and showed how cognitive thought development takes place. He explained behaviour in terms of the individual's actions and reactions in adapting to his environment. Unlike animals and birds, human beings have very few instinctive responses and have to constantly evolve new ways and means to deal with the environment. A lamb or chick, few hours after birth, knows how to run away from danger or differentiate between things which are edible and non-edible.

In contrast, the new-born human infant often does not know what to eat and what not to eat, let alone being able to recognise danger and is not even capable of recognising the mother. But three or four years later, the 6 - Iamb or the chick grows up to be a goat or hen and reaches a stage where it can produce milk or eggs. The child, though not fully capable of taking care of itself, nevertheless reaches a stage where he can run, talk, learn to read and so on. When faced with a danger like a bully in the playground or a stray dog barking and coming towards it, the child may choose to react in any way - run away (like a lamb), hide behind another human being, scream and cry rooted to the same spot or attack by throwing mud or stones. This ability to think of alternatives distinguishes man from many other animals. The lamb is born with many strong practical instincts while the infant with few. But in the course of development, the human child learns a variety of strategies for solving problems that give a far greater flexibility than the lamb. This is man's unique capacity for adaptation.

Piaget first became interested in human adaptation when he watched his own children playing. He noticed that the way they approached environmental problems changed dramatically at different ages. He wondered whether it was their coordination which improved or whether older children think differently from their younger brothers and sisters. Piaget became a keen child-

watcher; he played with them, asked questions about their activities, observed them silently for hours together when they were playing alone and with others. He also devised games that would show how they were thinking. Gradually, he understood that there is a pattern. He realised that all children go through a series of stages as they grew. The stages identified and described by Piaget are the sensory-motor stage, the pre operational stage, the concrete operations stage, and the stage of formal operations. The Sensory-Motor Stage: The new-born infant sucks anything which is put into his mouth, grasps anything put into his hands, and gazes at whatever crosses his line of vision. You may have seen small children putting everything into their mouth, their own hands, fingers toes, toys and other objects which are within their grasp. They do not realise that only some objects can be sucked and others not. Similarly, a baby may grasp a rattle, shake it, put it into the mouth, drop it and so on. However, the infant at some point realises that the noise he has been hearing comes from the rattle. He begins to shake everything he gets hold of trying to reproduce the rattling sound. Gradually he begins to realise that some things make a noise and others do not. In this way, the infant begins to organise his experiences by fitting them into categories. Piaget calls these categories schemata. They may be considered as simple frameworks which provide a basis for intentional and adaptive problem-solving behaviour in later life.

The child also learns that the objects in the real world, including people, have an existence of their own, independent of its perception of them This awareness is not present in early infancy Piaget describes the following expenment with his eight-month old daughter Jacqueline.

"Jacqueline takes possession of my watch which I offer her while holding the chain in my hand. She examines the watch with great interest, feels it, turns it once, says "apff', etc... If before her eyes, I hide the watch behind my hand, behind the quilt, etc. she does not react and forgets everything immediately."

However, after a few months, i.e. at the end of the sensory-motor period, Jacqueline became quite capable of finding the watch if it was hidden behind the quilt or hand. This shows that she learnt that objects continue to exist even when they cannot be seen. We often come across a toddler playing with a ball or watching insects when they move under a chair or a cot. The child begins to search J and look for them, because he or she realises that the ball or insect exists though concealed. This indicates that the child has developed a sense of object permanence or object constancy. This awareness is crucial to cognitive development, for it enables the child to begin to see some regularity in the way things happen. The perception of regularities is absolutely essential because if every time he encounters a ball or an ant he experiences it as a new stimulus he will never be able to learn to associate the ball or an ant as an external object and that his actions affect them. Thus, by the end of the sensory-motor stage, the child acquires a kind of 'motor intelligence' through direct interaction with his environment. The child knows that his or her actions will have an effect on things outside him or her.

PRE-OPERATIONAL STAGE

The second stage in thought development runs from about two to seven years of age. The child in this stage is action-oriented. His understanding and thought processes are based on physical and perceptual experiences. The child begins to use symbols or representations of events, and form images about everything he encounters. The most obvious example of representation is the use of words or language and it is at this stage that the child begins to use words to stand for objects. For example, the child is able to talk about things that are not physically present, about lions, tigers, ghosts, etc, though he has not seen them. Children play a variety of imaginary games where a chair becomes a train or bus, dolls become babies, leaves and flowers become food and so on. They are not fully capable of making a distinction between themselves and the outside world. They assume that objects have

feelings. When playing with dolls, they think that dolls cry, smile and behave like real babies. They consider their own psychological processes, such as dreams, to be real and concrete events.

Piaget found that children at this stage tend to focus their attention on a single aspect of an object or an event that attracts their attention, ignoring all other aspects. This was demonstrated in the following famous experiment. Children were asked to fill two identical containers with beads. When they had finished, Piaget poured the beads from one container into a tall thin glass and asked them if one had more beads than the other. Invariably, the children said 'yes', even though they realised he had not added or taken away any beads. This illogical response arises because children can only think about one aspect or dimension at a time, i.e. height or width. Piaget calls this single-mindedness.

Piaget found that thinking during this stage is rigid and 'irreversible'. J.L. Phillips gives an interesting example of irreversibility. He asked a four-year old boy if he had a brother; the child replied 'yes'. He then asked the brother's name; the answer was 'Jim'. 'Does Jim have a brother?' The child responded with a definite 'no'. This illustrates that the child could not reverse the principle underlying the same concept, i.e. of having a brother. Another feature identified in the above illustration is the child's inability to think of himself as somebody else's brother. This inability to put himself in Jim's position and see himself as a brother is an example of egocentricism.

Another interesting aspect of pre-operational thinking identified by Piaget is• the concept of conservation. In the pre-operational period, the child does not know how to 'intellectually conserve'. In his experiment, four marbles were arranged in the following pattern in front of the child.

The child steadfastly maintained that the rearrangement contained more marbles. Piaget explained that at this point the

child is struck by the visual-spatial evidence at that moment rather than by the knowledge that these are the same four marbles in new positions. The child cannot realise and maintain the fact that the same number of marbles could occupy more space. Piaget terms this, as an inability to 'conserve' the idea of number. The child also has difficulty conserving other qualities of stimuli such as volume, mass, etc.

The concept of conservation of volume was demonstrated in a simple experiment using containers of different shapes and water. Transparent glass containers A, B, C and D, as shown in Fig. 11.2, were placed in front of a child. The containers B and C had identical quantity of water. The experimenter poured water from the container B into A. When the child was asked whether the amount of water contained in A is the same as in C, the child unhesitatingly pointed towards container A (the taller one) and said that it conlains more water. Similarly, when the water from C was poured into D and the child was asked whether the quantity of water in A and D is equal, the answer was that the quantity of water in A is more.

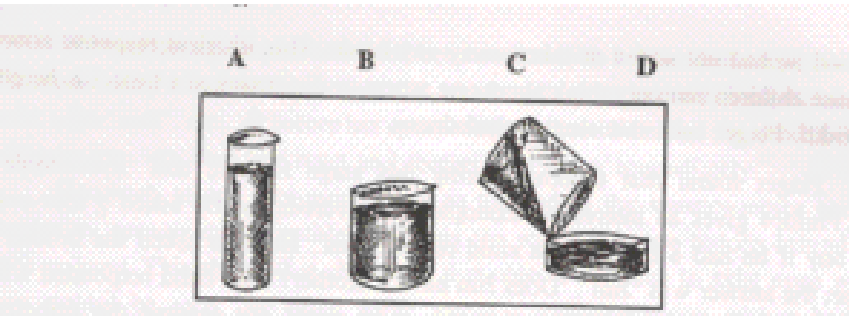


FIG. 11.2 *The conservation concept illustrated with volume of water*

Above experiment demonstrates what Piaget would call an inability to conserve. The child's idea or estimation of the quantity of water was influenced by the size, height, shape and other characteristics of the containers. The child's estimation of the quantity of water showed a lack of stabillity and definiteness and appeared to depend on the characteristics of the containers.

Concrete Operations Stage: During this stage, which usually occurs between 7and 11 years, the child acquires basic notions of time, space, number, etc. and also a flexibility which was lacking in the pre-operational stage. The child, during this stage, learns to retrace his thoughts, correct himself, start working right from the beginning if necessary, consider more than one dimension at a time and to look at a single object or problem in different ways. Three logical operations characterise thinking at this stage: combining, reversing and forming associations. These operations can be illustrated with a simple example.

Ask children of different ages, say below seven years and above seven years "Supposing, you are given this coin (showing a one rupee coin) to buy chocolates. If the shop owner gives you two chocolates in exchange for this coin (one rupee coin), how many chocolates would you get in exchange for these four coins (showing four coins of twenty five paise)". Children under seven may come out with responses like four chocolates or eight chocolates and so on. However, children above seven, iii the concrete operations stage, will be able to distinguish and combine all the small coins (twenty five) into a superclass of hundred paise or one rupee. They will alsQ be able to conserve this process of adding four twenty five-paise coins into a single coin or reduce single one rupee coins to four twenty five-paise coins. They are also capable of associating a twenty five-paise coin with other coins like two ten-paise coins and one five-paise coin. Children at this stage, although quite logical in their approach to problems, can only think in terms of concrete things they can handle or imagine handling. But an adult is capable of thinking in abstract terms to formulate tentative suggestions or hypotheses and accept or reject them without testing them empirically. This ability is said to develop in the next stage.

FORMAL OPERATIONS STAGE

A ability is acquired in this fourth and final stage, which occurs between 11 and 15 years of age. To demonstrate the development of abstract thinking Piaget conducted a simple experiment. He gave an opportunity to the children to discover for themselves Archimedes principle of floating bodies. Children in the concrete and formal operations stage were given a variety of objects and were asked to separate them into two groups: things that would float and things that would not. The objects included cubes of different weights, matches, sheets of paper, a lid, pebbles and so on. Piaget then let the children test their selections in a tub of water and asked them to explain why some things floated and others sank. The younger children were not very good at classifying the objects and when questioned, gave different reasons. The nail sank because it was too heavy; the needle because it was made of iron; the lid floated because it had edges and so on. The older children seemed to know what would float. When asked to explain their choices they began to make comparisons and cross-comparisons, gradually coming to the conclusion that neither weight nor size alone determined whether an object would float; rather it was the relationship between these two dimensions. Thus, they were able to approximate Archimedes principle (objects float if their density is less than that of replaced water). The fact that these children searched for a rule or a principle is what makes this stage of development superior and significant. Younger children find reasons by testing their ideas in the real world. They are concrete and specific. While children at the formal operations stage and beyond go further than testing the, 'here and now'; they try to consider possibilities as well as realities and develop concepts. Thus, we see that at the final stage, the individual is able to arrive at generalisations, and real thought processes begin to develop. Piaget's developmental theory essentially concentrates on the structural and formal characteristics of thinking. He believes that his scheme of the development of thinking is universal. Piaget introduces a number of concepts like adaptation, accommodation,

assimilation, centering, decentering, etc. It is not necessary to go into these concepts here.

SULLIVAN'S CONCEPT OF MODES OF THINKING

Yet, another approach to the development of thinking comes from t1 views of H.S. Sullivan who was a leading psychoanalyst. Sullivan postulates three basic modes. The first and the earliest one is called the prototaric mode. This stage operates in the first year of an individual's life and during this stage one has no awareness of oneself or one's ego. Thought process is mostly in the form of a feeling or apprehension. Thought, therefore, does not have a definite structure and is vague.

The next is the parataxic mode. During this stage the global or undifferentiated response gives way to specific elementary thought images and contents. Logical operations do not occur yet. According to Sullivan the autistic state of communication reflects a parataxic mode. Thought process is still confused and vague and almost comparable to the prelogical stage described by Piaget. The final stage which is known as the syntaxic mode represents the development of logical thought processes, enabling the integration and organisation of symbols. It is at this stage that thought becomes clear with the possibility of logical operations. This stage would correspond to the stage of formal operations described by Piaget. A distinction, however, may be made in that, while Piaget's theory was specifically a theory of thinking, Sullivan does not deal with thinking exclusively. His concept of modes is more or less a view of cognitive organisation in general, a process by which the individual perceives and experiences the environment, which necessarily includes thinking.

BRUNER'S THEORY

Yet, another approach to the development of thinking was outlined by Jerome S. Bruner, who like Piaget, observed the process of cognitive development or development of thinking.

Bruner also postulated certain stages. The stages formulated by him are enactive, iconic, and symbolic representations which are considered more or less comparable to Piaget's preoperational, concrete operational and formal operational stages. However, Bruner differed from Piaget in focussing on the representations the child uses in thinking rather than on the operations or manipulations which take place in the process. Bruner uses Piaget's experiments to explain his point of view of cognitive development which is briefly described below.

ENACTIVE REPRESENTATION STAGE

A child at this stage adopts the most basic or primitive ways of converting immediate experience into a mental model. This mode of conversion is usually non-verbal and is based on action or movement. Thus, a child's representations of objects and events in terms of appropriate motor responses or 'acting out' is known as enactive representation. Bruner cites Piaget's experiment to explain this stage. "A baby drops a rattle through the bars of its crib. It stops for a moment, brings its hand up to its face, and looks at its hand. Puzzled, it lets its arms fall and shakes the hands as if the rattle were still there; no sound. It investigates its hand again." Bruner suggests that in this situation, the child is representing the rattle when it shakes its hand that is the rattle means shaking its hand-and hearing a noise. Gestures are enactive representations. For instance thumbs up means victory; index finger on your lips means silence, and so on.

ICONIC REPRESENTATION

An icon or an image or a pictorial representation is considered to be the method of converting immediate experience into cognitive models using sensory images. This stage was explained by extending Piaget's study which was described in the previous stage. The child a few months later when it drops the rattle tries to look over the edge of its crib. When an adult picks it up or if the child is unable to see it, the child may- start screaming

and crying. According to Bruner, this sense of loss indicates that the child has an image of the rattle in its mind and that it now distinguishes between shaking his hand and the rattle. This type of 'picturing' things to oneself is called iconic representations thinking.

SYMBOLIC REPRESENTATION

As the child grows, it reaches a stage where its cognitions are not always dependent on motor activities or images and pictures. Its cognitive process begins to function in terms of symbols. The symbols do not depend on images or concrete appearances. For example, the word 'girl' neither looks nor sounds like a female child. Similarly, the number eight does not resemble the quantity eight. Consider a simple arithmetic problem. A boy has four mangoes and he buys two more. How many does he have? A child of five or six years may solve the problem by drawing four and two mangoes and counting them, while an older child may write the numbers, four and two, and adds them up without imagining the mangoes.

PSYCHOANALYTIC THEORY OF THINKING

It would have been surprising if an all-embracing theory like Freudian psychoanalysis did not make its contribution, though indirectly, to our understanding of the process of thinking. The Freudian theory of development with its concept of different stages like oral, anal, phallic and genital, drew several conclusions for the understanding of thinking. According to Freud, the early period of infancy is characterised by what is called narcissistic thinking, wherein the thought process contains a high tint of wish fulfilment. Freud refers to certain terms like omnipotence of the wish and the omnipotence of thought or word.

The stage of omnipotence of the wish is characterised by the fact that this stage thought is highly coloured by instinctual impulses, a total absence of distinction between reality and non-

reality. The next stage shows what he calls omnipotence of thought. Here thinking becomes symbolic and verbalised but still remains highly egocentric. It is only at a later stage that thinking becomes objective and a distinction emerges between the inner self and the outer world. Thought comes more and more under the influence of perception and is emancipated from the stranglehold of instinctual impulses. During the latency period, the thinking process expands and according to Anna Freud, there is an enrichment of fantasy and abstract thinking.

Thought, according to Freud, is an integral part of the total function of living and the nature of the thought process reflects the overall developmental stage of life itself. In simple terms, thinking is one of the mechanisms of living and plays a vital role in the overall process ofadjustment. Freud says that there is a thin dividing line between reality and fantasy. If this is true, then, thinking is to fantasy what living is to reality.

THEORIES OF THINKING - POINTS OF CONSENSUS

In the above paragraphs an attempt has been made, perhaps in slightly extravagant detail, to present different explanations of the nature and development of thinking. No doubt these different approaches differ among themselves but certain points of consensus seem to emerge. These may be summarised as follows:

(a) Basically all theories agree that in the earlier stages thought is essentially sensory-motor in character and is bound by immediate sensory experiences.

(b) At the second level a distinction emerges between sensory experience and thought, due to the development of the capacity to form images and later, thought gets separated from sensory experience.

(c) At the third level the capacity to use symbols, words and ideas emerges along with the expanded capacity for forming imagery. Thought is both concrete and abstract and is still influenced by inner processes - it is egocentric.

(d) At the final level thought becomes an independent process, relatively free of concrete experience, capable of interpreting and organising the same and goes beyond the 'here and now'.

(e) Abstract thinking emerges.

It may be seen that most of the theorists agree on these general features. Individuals differ with regard to the rate at which this process of development occurs and also the extent to which they go through to the last of these stages. Some individuals tend to remain at the egocentric or concrete levels while others go beyond. It is also possible that some individuals, after reaching a certain stage, can be thrown back to an earlier level of thinking when confronted with severe psychological crisis. Thus there can be a process of regression in thinking. Autistic children provide evidence where thinking has not proceeded beyond the most elementary level, whereas psychotic patients provide clear evidence of a regressive process.

It may further be pointed out that the process of development of thinking is very much influenced by all the factors which influence development in general. The process of socialization, education, personal experiences, etc., all influence the development of thinking. In brief, the process of thinking develops along with the person.

CONCEPTS AND THE DEVELOPMENT OF CONCEPTS

The reader, going through the above paragraphs, would have noticed that thinking, which originally occurs as a part of sensory experience, gradually becomes independent of it and makes use of images, words, symbols, etc. Images and ideas gradually come to substitute for actual objects, events and people. Let us take the example of a young boy. The dog in his house is a dog and similarly the one in his cousin's house is also a dog. Later on, one becomes a big dog and the other a small dog, or a brown dog or a black dog based on the visual experience he has. These two are different

in his eyes. Subsequently, all of them are dogs, but with qualifying differences. The dog in his house is a big Alsatian, while the one in his cousin's house is a small Pomeranian. Thus, the thought process involves the comparing and contrasting of different experiences and the emergence of certain ideas which help the boy to organise and comprehend differences and similarities between experiences. Now he has the capacity to tell his father, "Let's get a white Pomeranian", even though he probably has not seen one.

The process of thinking, thus, gradually becomes independent of actual and immediate experiences because the individual has developed the capacity to differentiate and integrate varied experiences and is able to anticipate experiences and actually experience them even before they occur. This is possible because thought has developed the capacity for organisation and integration. The unit of thinking now becomes concept.

Adult thinking mostly takes place with a concept as the unit. The child knows that a cow is different from a dog and at the same time also knows that both are animals. It knows that day and night are different, but together they constitute a day. Concepts, therefore, are more inclusive units than actual sensory experiences and help the individual in fonning a more economical and effective way of organising his experiences. He is able to experience 'an experience' even in its absence. He forms more and more general ideas. The reader can see that this course of development is a functional necessity. Otherwise, with so many experiences, the thought process would remain chaotic and anarchic.

The organisation of experiences into concepts indicates both a necessity and the capacity in the organism to organise his experienced world more conveniently and comfortably. The development of concepts helps the person to understand more and

more of the phenomenal world with less and less effort, thus contributing to the overall functions of adaptation and growth. We may now briefly define the term concept. A cOncept is a generalised image or idea formed by an individual about a class of objects or events based on experience.

Some examples of concepts are animal, tree, building, machine, etc. These concepts, it may be seen refer to actual concrete objects in the environment On the other hand, there can also be concepts which do not refer to actual objects. Such concepts are known as abstract concepts. The concept of God, concepts of good and bad, the concept of happiness, etc., belong to this category. An outstanding example of this category is the concept of beauty. Abstract concepts can again be moral, social or aesthetic. The most complex concept which people develop is the 'self-concept', the general idea which an individual forms about himself or herself.

Concepts sometimes can deviate widely from reality and facts. This is a result of an excessive operation of the tendency to generalise. Stereotypes about groups of people are the result of such a process, although here certain motivational processes are also involved. It is interesting that concepts are often related to each other. For example, an individual's self-concept, to a large extent, determines other social and personal concepts. An individual, who has a very poor idea of oneself, often forms poor concepts of others also. It is here that one sees that concept formation beyond a certain level is not a purely cognitive process. In the above example mechanisms of compensation and projection come into opei (See chapter on Adjustment for an explanation of these two terms).

Another interesting feature about concepts is that they form a hierarchy. For example, a dog is a brown dog, it is a spaniel, it is a canine, it's an animal and it is a living organism. This type of

hierarchical order of concepts results from the operation of the same basic processes of observation, generalisation, discrimination and abstraction. We may now briefly consider these processes.

PROCESS OF CONCEPT FORMATION

The process of concept formation is complex and involves an interplay of the basic processes of perception, learning, remembering, thinking and in many instances, also the process of motivation. This process goes on throughout life. We may now consider some of the basic steps involved in the acquisition and development of concepts.

Observation: The first stage in the formation of concepts is the observation of an event, object or an experience. This can also be called the stage of becoming aware. This can be either direct or indirect. The child can directly see a dog and become aware of it. On the other hand, he also hears stories about devils and giants from his parents and grandparents; here the awareness is indirect. Thus, all of us have some knowledge or awareness of primitive people (or at least we believe we have) even though most of us have not seen them. Generally repeated experiences provide the basis for the development of concepts.

GENERALISATION

Repeated experiences or observations of different objects result in a tendency to form a general idea. Thus, a child first sees one dog, then another dog, then a third and so on and begins to form the general idea of a dog. This is called the process of generalisation. The reader has already read about the phenomenon of stimulus-generalisation even at the level of simple conditioning. The process of generalisation explains how the child acquires many concepts like the concepts of gender, shape, number, etc.

DISCRIMINATION OR DIFFERENTIATION

Along with generalisation and the observation and

organisation of similarities among things and objects, the child also becomes aware of the differences between them. Thus, all dogs are alike and all cows are alike. Dogs run on four legs and cows also do the same. At the same time dogs and cows are different from each other and big dogs are different from small dogs, and bulls are different from cows. It is this type of sequential operation of generalisation and differentiation in interaction that leads to the formation of concepts.

ABSTRACTION

From the description of the above processes the operation of abstraction becomes evident. The child has seen dogs and he happens to see a cow on a different occasion. He does not observe them at the same time but inwardly he compares his experiences on the two occasions. The perceptions and the experiences are now inwardly analysed and re-experienced in the absence of the objects. This results in an appreciation of similarities and differences. This process by which the experience is analysed in the absence of actual situations is known as abstraction. It is abstraction which actually transforms comparable and contrasting experiences into concepts. This ability to respond to concrete situations in the absence of the actual situations is known as abstract thinking ability. It can be seen that as the child grows older, the process of abstraction plays an increasingly important role in the development of concepts. It is this process of abstraction which helps us to form ideas of the future and far off objects. The growth of science, in particular, and knowledge, in general and, perhaps, the growth of culture and civilisation, have all been possible because of our ability to form abstract concepts. Concepts like force, energy, mind, truth are all examples of abstract concepts. Literary creations, masterpieces in art and other fields, are all embodiments of abstract concepts.

The ability to form abstract concepts is related to the intellectual ability of an individual and the richness of his

experience. To a large extent performance in intelligence tests also reflects the ability to form abstract concepts. The development of concepts proceeds from general and undifferentiated concepts to differentiated concepts. For example, when a child looks at an object for the first time, he forms a vague and general idea of the object as a whole. This is why, a child's concepts are not very clear. Gradually the details of the concepts become clear. One of the authors remembers that once upon a time his little niece referred to a pig as a big rat. It was only subsequently that the little girl developed both the concepts and was able to differentiate a pig from a rat. The formation of clear concepts, therefore, involves the three processes - generalisation, differentiation and abstraction. The greater, the wider and the richer an individual's experience with different objects and stimuli the better is the process of formation of concepts. The reader will, no doubt, understand the importance of the formation of clear concepts for proper adjustment and the importance of a rich and varied environment for enhancing the development of concepts in children.

Experiments in psychology have shown that certain factors like labelling or giving a name influences the process of the formation of concepts. In a very interesting experiment, years ago, Heidbreder showed how the addition of certain labels to vague visual stimuli influenced concept formation. The effectiveness of social stereotypes again provides an illustration of the same. We form ideas of people on the basis of what we hear about them.

MEASUREMENT OF CONCEPT FORMATION

Concept formation is a very important psychological function. The type and level of concepts which one can form give an indication of one's intellectual ability and also, to a great extent, the type of adjustment he makes with th world. In view of this, psychologists have developed tests to measure the level of concepts that an individual can form. As has already been

mentioned, Piaget has developed a number of tasks which tell us about the level of thinking and concept formation in an individual. Another important test originally developed by Vigotsky and later on by Kasanin and Hanfman consists of twenty two blocks and requires the subject to classify them along different criteria. The blocks painted in four colours are of three or four different heights, base areas and shapes. The well-known test developed by Goldstien and Scheerer is used to measure the individuals' ability to form abstract concepts as different from concrete concepts. Finally, many intelligence tests are also useful in assessing an individual's ability to form concepts. In fact, the operation of any intelligence very much depends on the ability to form concepts.

PROBLEM-SOLVING

When our thinking is completely focussed on the task of finding a solution to a problematic situation, it is called problem-solving. For example, if I sit in the front verandah of my house looking at the full moon and see in it various objects, ranging from the face of a pretty woman to the back of a monkey, this is imagination. On the other hand, if I sit in the same place and start making guesses about the election results, it is thinking. If I am sitting in the same place wondering how to arrange the furniture to accommodate a dozen guests whom I have invited home, it is an example of problem-solving. It can be seen that problem-solving involves the finding of an answer or a way out and is necessarily followed by action. Psychologists have been interested in understanding how this process works. Primarily; it involves the careful observation and assimilation of all the information that is available.

The next step involves an analysis of all the information and assessing the same in terms of their relevance and irrelevance. At the next stage, the individual thinks out the various possible solutions. In the above example of providing sitting accommodation for the large number of guests, I can think of various solutions.

First, I can think of borrowing a few chairs from my neighbour. The other possibility is that I can spread a carpet on the floor and make them sit in our traditional Indian style. The third possibility is that I can take them out into the lawn and make them sit there. Then I analyse the various possibilities. The first possibility will not work as my neighbours have gone out. The second possibility also is not very feasible because the few carpets available are not clean. The third possibility also appears to be difficult because of the Possibility of heavy rains.

The reader may see in the above example a sort of trial-and-error mechanism; the only difference is that these trials are at the thought or mental level. This is known as implicit trial-and error. Here, one can see the role of imagery. However, a scientist working in a laboratory to find a solution to a chemical problem may actually try out the different possibilities in an experimental set-up. Here, implicit trial-and-error is supplemented by explicit trial-and-error now, going back to my problem of accommodating the guests; I suddenly arrive at the Solution. I accommodate the adult guests in sofas and chairs and accommodate the children on one or two carpets spread on the floor in another room. This idea, though simple, strikes me suddenly. The reader can see that this involves an integration and combination of the two solutions which suggested themselves to me earlier. The last stage of problem-solving, therefore, involves organization and reorganization of different Possibilities and finally converging on a solution. This process, therefore, may be called convergent thinking. The above narrative gives the reader an idea of the nature and course of the process of Problem-solving. It involves imagining, thinking, trial-and and insight.

CREATIVE THINKING

The student certainly must have come across the terms creativity, creative thinking, etc. He must have come across the names of creative scientists, artists, and writers like Galileo,

Newton, Leonardo Da Vinci, Shakespeare Kalidasa and many others. All these great personalities created something new, added something new to the existing universe of knowledge, or produced something original. In fact the entire growth of human civilization, science and technology is to a large extent a result of the contribution of such creative persons. Creativity is therefore characterized by our ability to produce something new, may be a tool like the Davey Safety lamp, or an idea or theory like Newton's laws of gravitation or a piece of art or for that matter anything. Here we may pause to make a distinction between creativity and creative thinking. Creativity in a way is a broader term than creative thinking. The latter refers to the kind of thought processes, or type of thinking employed by creative people. However, creativity in addition to creative thinking involves a variety of other processes like perceptual process, emotional factors, motivational factors, etc. Thus it may be seen that creative thinking is one part of creativity, the latter being more like ability and the former, a process.

In the early stages of the development of psychology, the concern was mainly related to understanding of the creative behaviour of very eminent creative personalities. Sir Francis Galton, Havelock Ellis, and Lewis M Terman undertook an analysis of the biographies and life patterns of great men and women of genius. A rather dominant conclusion, which these investigators arrived at was that creativity or creative thinking was a specialised and exclusive ability, mostly inherited. Soon, however, more scientific researches were undertaken which led to conclusions that were different. The pioneering studies in this regard were those undertaken by Guilford. Studies by Torrance, Getzels and Jackson and many other investigators showed that creative thinking was not an exclusive or very specialised type of process. It was further shown that ability to create or employ creative thinking was not inherited. Yet another conclusion that emerged was that while creative individuals were distinctly above average in

intelligence, a very high degree of intelligence is not essential for creative thinking or creativity. It is estimated that about 1/6th of the population given other forms of support and facilities, can become creative. Based on this, a number of training programmes have been arranged for improving creative thinking and creative problem-solving ability. Here it may be seen that creative thinking results in addition to knowledge, or in a re-ordering and re-interpretation of existing knowledge.

John Dewey, the well-known philosopher, psychologist and educationist was one of the earliest to make a study and arrive at a description of the process of creative thinking. According to Dewey there are four stages in the process of creative thinking. He describes them as follows.

a. Observations :

The basic process involved is observation, the foundation of any act of creativity. The creative individual is a more keen observer. He or she observes events and experiences in greater detail and more carefully. Not only this, he or she is a more intense observer. What strikes a common individual, as a trifling event very often attracts the attention of a creative person. Thus a creative person is more extensive and intensive in his observation. Further, he is more selective in his observations.

b. Incubation

While most of us gloss over an object that we have observed, a creative person goes thinking, examining, analysing, interpreting and re-interpreting what he observed. Thus a lot of 'cerebral' activity goes on, to a large extent unconsciously. Perhaps we may use the term "unconscious cerebration". This stage is referred to as incubation. In this process of incubation, a considerable amount of 'trial and error' learning also goes on. In fact, the person is often restless during this stage. Perhaps when Edison remarked that "genius is 99% perspiration and 1% inspiration" he was referring to this stage.

c. Illumination :

As this process of unconscious activity (sometimes also conscious) goes on, suddenly, the individual finds a right answer to his problems, doubts and questions. This sudden understanding or insight very often occurs, when the person is sleeping or doing something which is totally different and far removed from the main problem or issue. Thus Archimedes found an answer to his question, in his bath-tub, the "Eureka" experience. The answer or solution appears to come suddenly and is therefore referred to as illumination or the appearance of light and dispelling of darkness. The student may have seen a similarity to the "aha" experience of the chimpanzee in Kohier's experiment on insight learning.

d. Verification:

A creative person, who experiences illumination does not accept the solution or knowledge unconditionally when an illumination occurs. The individual tries to verify, whether the solution is correct, valid and reliable in terms of the existing knowledge or facts. Very often after the process of verification, the solution or answer is rejected and the person goes for more observation, and also incubation. It is this process of verification which differentiates scientific creative thinking from unscientific creative thinking. If we compare a scientist and a philosopher, the latter often stops at the point of illumination and does not go through the stage of verification. The process of verification is continuous and very often we find that creative individuals, revise, modify or change their ideas. It is here that some personality factors enter the picture, viz, flexibility or rigidity, involvement, motivational processes, open-mindedness, etc.

CONVERGENT AND DIVERGENT THINKING

In recent years, Guilford on the basis of extensive research has made a distinction between convergent thinking and divergent thinking. According to Guilford, traditional intelligence generally deals with day-do-day problem-solving activities, mainly involving

convergent thinking which involves the direction of all thought process in one single direction. Convergent thinking proceeds on the assumption that there is one single best solution to any problem, and also that the solution can be arrived at on the basis of the existing knowledge or a little extension of the same. In a way it is 'conformative' to the existing knowledge and human principles of logic. Convergent thinking looks for gradual emergence of a solution and proceeds on the assumption that the kndwledge, ideas, principles and directions of thinking already known are to a large extent correct. Such thinking is often described as linear. Convergent thinking is rational.

Divergent thinking on the other hand proceeds differently. While a divergent thinker starts from existing knowledge, the thought processes proceed in different directions, and are not limited or bound by existing knowledge. On the other hand, the divergent thinker questions and doubts the adequacy of existing knowledge. The divergent thinker has an open mind. He is not controlled by the belief that there is "one best solution" to any problem or "the correct answer" to any question. In the process of looking for an answer to certain questions, the divergent thinker actually raises questions before proceeding to search for an answer. Thus many creative thinkers, started raising questions and doubting the wisdom of existing knowledge. While "convergent thinking" proceeds mainly along known and proximate principles of association, divergent thinking follows channels of remote association. While the former is to a larger extent concrete, the latter is more abstract. According to Guilford, creative thinking involves more of divergent thinking.

The student may rightly ask the question that if creative thinking is not innate or inherited as claimed by some, then why is it that we have not had many more creative personalities? The answer to this question is that in all our societies and even in our educational practices, we have laid emphasis on convergent

thinking (if at all there is any emphasis on thinking) and not on divergent thinking. The educational system and practices should encourage divergent thinking and allow the students to explore, and find the answers themselves. Our examinations mostly test memory and to some extent thinking. Such practices naturally kill creative thinking or atleast make people afraid of being creative. Our system makes people afraid of failure and creative thinking cannot flourish in an atmosphere where people are afraid of failure. It is encouraging to note that people are beginning to examine these issues more seriously. Besides 'this, creativity also depends on the development of the right type of attitudes, values and also a high degree of motivation. Environmental support, particularly at home is very crucial.

Further, ability to face failures, tolerate stressful situations, and looking for long-term goals rather than short-term goals are some of the psychological attributes associated with creativity. Thus creativity development involves training in creative or divergent thinking, emotional development, motivational development and in short, development of the individual's total personality.

SOME OTHER FORMS OF THOUGHT PROCESSES

We have so far examined certain common types of thought processes which normally form part of the adjustment process of our wakeful life. If thought or thinking is defined in a wide sense to mean implicit cognitive activity involving the manipulation of images, symbols, concepts, etc., then perhaps there are certain other forms of activity or experience which may also be brought under a broader concept of thinking or thought. These are fantasy, daydreams and dreams.

FANTASY

All of us indulge in fantasy or cognitive activity which involves the manipulation of images, symbols, and concepts and

the weaving of them into organized forms of thought, though not based on reality. The proverbial story of the milkmaid's daughter is an example of fantasy. Similarly, a young child who hears about the Asian Games may imagine a whole lot of things about the Asian Games and form his own ideas. In a way, fantasy may be defined as organized imagination around a certain theme or event or problem. The only difference between fantasy and thinking is that the latter is based on objective reality and the former on subjective, or imaginary reality and often based on hopes, fears, or worries.

Although fantasy has formed a part of human cognitive processes since time immemorial, it was only with the advent of Sigmund Freud that it received the attention of scientific psychology. It was Freud who pointed out the importance, perhaps even the indispensibility of fantasy in the normal process of psychological development. According to him fantasy is the basic and primary form of thought and perhaps the only form of thought found in children. The child, in its earliest years, is not capable of distinguishing between himself and the surroundings on the one hand and between the real and the unreal on the other. Since, structured and organised thought processes develop a little later, fantasy is the main mode of cognitive activity.

Fantasy, at this stage, is very much influenced by the instinctual wishes and strivings. In fact, fantasy provides an outlet for such wishes and strivings. At a later stage as structured thinking and a sense of reality develop, fantasy gradually loses its primacy and becomes a medium of expression for wishes and strivings which cannot be fulfilled in reality. If an individual makes excessive use of fantasy he may be considered to be maladjusted. It can be seen that adults who develop psychological or emotional disorders display a lot of evidence of fantasy, thus, substantiating Freud's claim that such individuals have regressed to an earlier style and mode of adjustment. The reader will learn later how fantasy, as a

medium, is employed in certain tests to understand the inner activities of the individual's personality.

DAYDREAMS

A form of fantasy in which all of us indulge at some time or other, is daydreaming. The difference between daydreams and fantasy is that the former are much more organised and relate to the conscious mental activity of the individual. Further, in a daydream the individual is the central character and all other events and experiences centre around the individual. One daydreams of all types of enjoyment, all kinds of success, or even all kinds of misfortune and failure. The example of the milkmaid's daughter given earlier, actually fits in better here. Another example would be that of a young man who has appeared for the interview for the job of an engineer, who sits at his desk and imagines how he is going to accomplish difficult engineering feats or tasks and become famous when he does not even know whether he would be selected for the job or not.

To make the distinction clear between fantasy and daydreams the following example is given. If I sit down and start visualising about heaven, the pleasures therein, etc. it would be fantasy. On the other hand, if I start visualising that I am in heaven and start experiencing all the pleasures therein it would be daydreaming. Thus, it may be seen that the capacity for daydreaming depends on the development of the concept of ego or "I", whereas fantasy does not depend on this. Naturally, very young children cannot experience daydreams though they are fantasy-prone. Daydreams are, to a large extent, influenced by the individual's wishes, strivings, fears and worries of a conscious type. These elements find expression when the individual is psychologically free from the constraining and directing elements of reality. In fact, daydreams are temporary egocentered holidays from reality.

Daydreams are not always useless. In fact they are useful in more than one way. In the first instance, they provide a refreshing and reassuring escape from reality. They can instil hope and courage in a person otherwise oppressed by reality, provided of course that they do not replace reality. Secondly, daydreams often provide a means of setting goals, targets and levels of aspiration, which the individual may subsequently translate into reality. One such example is of Dick Whittington, a poor boy, who became the mayor of London three times, or Demosthenes who imagined that he would be the greatest orator of the world (even though he was a stutterer) and ultimately became so. Another feature of daydreams is that the thought process here is very similar to that in normal thinking and has an internal logic.

However, it is hoped that the above remarks will not drive the reader into endless spells of daydreaming. While daydreams may stimulate constructive efforts and activity towards achieving success, daydreaming alone will not result in success. On the contrary it may lead the individual to a psychological imbalance.

DREAMS

Dreams are very common experiences. There is scarcely anybody who has not had dreams. Dreams are a certain type of psychological activity or experience which occur during sleep. Dreams have two basic characteristics. When we are dreaming, we are happily unaware of other things around us. Secondly, when the dream is over, we usually remember very little of our dreams. This is where dreams differ from daydreams. Daydreaming is a conscious activity occurring when our senses are fully alert though diverted from reality. Dreams, on the other hand, are not conscious activities and in fact occur when we are least conscious of ourselves or our surroundings. Daydreams very often reflect a person's conscious desires and designs to reach certain goals. Dreams, on the other hand, are of a different category. They do not often stem directly from conscious efforts or desires.

Philosophers and psychologists were, for a long time, interested in understanding the process of dreaming, as it represents a very puzzling though very common experience. We do not dream when we are conscious of ourselves and our surroundings, but while dreaming we seem to be conscious of everything which seems to be a part of our dreams. This paradoxical condition led early philosophers and psychologists to believe that the dream experience represents a special form of consciousness and probably thought. Traditional Indian thought recognised dream as a separate form of thought and consciousness (Swapna), along with sleep (Shushupti), Prajna or awareness and Jagrat or alertness. In ubsequent years, a number of attempts have been made to explain the phenomenon of dreaming.

Neurologists have attempted to explain dreaming on the basis of the internal stimulation of brain activity by chance. But, such attempts have, by and large, not been successful. At best, they may show that brain activity is a part of dreaming, but they have not proved that brain activity is the cause of dreaming. It is quite possible that once the dream originates it sets the brain activity in motion.

The most significant and important attempts at developing a comprehensive and psychological explanation of dreams again emanated from Sigmund Freud. It was Freud who, in the course of his researches in the field of psychoneurosis, developed the most comprehensive and systematic theory of dreams. In fact, to a large extent, Freud's theory of psychoanalysis, of the unconscious and of abnormal behaviour are based on his theory of dreams. Freud and his followers employed dream interpretation 'as the royal road to the unconscious'. Since Freud formulated his theory of dreams, a number of scientists devoted their attention and efforts to the study and understanding of dreams. More recently, rigorous experimentation has emerged as a method of studying dreams. It is to the credit of Freud that he stimulated and inspired such

concentrated research in this area. Many scientists have, naturally, differed from Freud though many others like Calvin Hall have spent their life translating Freudian concepts into experimental findings. The readers would be interested to know that there are exclusive laboratories devoted to dream research and one of them is in India, at the department of psychology, Andhra University in Visakhapatnam.

FREUD'S THEORY OF DREAMS

According to Freud, dreams represent psychological attempts to provide an outlet or expression for certain wishes which have not been satisfied or cannot be satisfied in actual life. Secondly, these wishes are largely unconscious and the individual himself is not aware of these wishes. Dreams, therefore, provide expressions for unfulfilled, unconscious wishes.

The reader is already familiar with Freud's concepts of the unconscious, repression and his theory of instincts. According to Freud, dreams originate from repressed wishes which are active in the unconscious part of the mind. Since, such wishes are not permitted expression at the conscious level and at the level of reality, they seek expression at the unconscious level and in fantasy through the process of dreaming. But the major difference between fantasy and dreaming is that the dreams center around the individuals, their wishes, fears, desires, etc. In this, dreams resemble daydreams but they also differ from daydreams because they occur at the unconscious level while daydreams occur at the conscious level. We may, therefore, say that dreams are unconscious daydreams occurring during sleep. Yet another difference between dreams and daydreams relates to the nature of the thought processes involved. While daydreams are related to normal logical (though not realistic) thought processes involving mostly verbal concepts and symbols, dreams on the other hand, involve sensory images and thought processes which are loosely structured and apparently not logical. While daydreams include a

large chunk of verbal concepts, abstracts and ideas, dreams on the other hand include apparently immediate sensory experiences, pictorial symbols, etc. Thus, dreams appear to involve sensory symbolic thinking, while daydreams involve abstract and conceptual thinking.

The reader has already been introduced to the nature of the development of thinking, earlier in this chapter. It was also pointed out that abstract conceptual thinking represents a more advanced mode of thinking compared to the thought process based on mere sensory images. It may, therefore, be seen that the thought process in dreaming represents an earlier and more primitive form of thinking. Dream thinking belongs to a stage where verbal symbols and abstract concepts are largely absent. It is precisely these characteristics which led Freud to formulate his theory of dreams revolving around the basic concept that dreams represent attempts at satisfying the repressed unconscious instinctual wishes.

DREAM WORK

Dreams, according to Freud, represent a type of experience whose real content and meaning is unconscious, though at the level of experience the individual is conscious of the dream. The dream as experienced and reported by a person is the inan dream or the manifest content, while the real, unconscious content or meaning is known as the latent content or the latent dream. It must be remembered that the person who experiences the manifest dream is not at all aware of the latent content or the latent dream. The reader who is already familiar with Freud's theory can appreciate the reason for this. This is because the latent content springs from prohibited and repressed wishes and experiences in the unconscious which cannot be provided access to consciousness, lest the individual's sleep be disturbed. This type of filtering mechanism is known as the censor. In fact, Freud observed that the dream is the guardian of the sleep which, in turn, is the nourisher of life.

Dreams, therefore, involve a process of disguising the latent content and transforming the same into manifest content. The latent content which is essentially in the nature of repressed ideas, wishes, impulses and memories are transformed into perceptual and cognitive experiences at the conscious level. This process of transformation involves a series of steps. Freud terms all these collectively as 'dream work'. Dream work involves the following steps :

a. Condensation :

The latent content usually represents elaborate and long drawn experiences spread over a long period in the individual's life, The manifest dream is, however, usually very brief, scarcely more than a few minutes in duration. Thus, extended, elaborate and complex latent content is condensed into brief dream story. This is again an essential safety mechanism. If the dream is very long the chances are that the sleep will be disturbed. In the actual experience of dreams, it can be seen that the real dream experience does not occur continuously throughout the sleeping period but in cycles. A small phase of dreaming is followed by deep sleep and again by dreaming and so on. This phenomenon has been shown by recordings of cortical activity and eye movements. The dreaming phase is characterised by Rapid Eye Movements or REM unlike the sleeping phase or Non-Rapid Eye Movement (NREM).

b. Symbolisation :

The second step in dream work involves the process of symbolisation. Here objects and things forming a part of the latent dream are transformed into symbolic forms. This obviously is a mechanism of disguise, again intended as a safety mechanism. It is this process of symbolisation which necessitates the interpretation of dreams. Freud and his followers contended that there are common and universal symbols symbolising specific objects and things in the environment. Thus, a house is a common symbol for a woman, a lion can be a symbol for one's own instinctual impulses and so on. Freud and his followers went one

step further and contended that most of the symbolised contents have sexual significance. Perhaps this is one point where everyone may not agree with Freud.

c. Dramatisation :

This step is essentially a process of distortion meant to ensure a greater certainty of the process of disguise. The whole manifest story is made to appear dramatic, realistic and absorbing so that the whole thing appears to be real and yet removed from one's own actual experience.

d. Secondary Revision or Elaboration :

When the process of condensation, symbolisation and dramatisation are gone through, the dream becomes loose, unorganised and almost scattered. The process of secondary elaboration remedies this and makes the whole dream appear as a meaningful, organised experience by filling gaps, connecting disparate symbols, etc. The dream after the secondary revision process assumes the characteristic of a symbolic drama or a story at the manifest level.

The above outline of Freud's concept of dream work shows how the latent content gets transformed into the manifest content. The latent content which is essentially in the form of thoughts and ideas is transformed into a sensory- cognitive experience. Images replace words, thus, showing a temporary regression to earlier forms of thinking. The above views of Freud have subsequently been studied by a number of psychologists using experimental and quantitative techniques. Studies by Calvin Hall, Vandecastle, Prasad and Bose have all presented findings in confirmation of the Freudian theory. Such studies have further shown that dream characteristics differ according to culture, age, sex, education, etc. These findings go to show that dreams really arise out of the past experiences of the individual. Nevertheless, it should be pointed out that there are psychologists who do not agree with Freud on his interpretation of dreams.

PATHOLOGICAL THINKING

In the preceeding pages the reader has been introduced to different types of thinking or thought experiences. All of them are found in normal people. To a certain extent dreaming, daydreaming and fantasy represent slight deviations from normal thinking processes. This does not imply that they are pathological or abnormal. They are slightly different from the normal thinking processes in the following respects. First, they do not constitute the regular components of the wakeful life thinking process. Secondly, they involve the use of jmages of a sensory type as different from the words, verbal symbols and concepts, used in the normal adult thinking processes. Third, daydreams, dreams and fantasy, if they become extensive, can interfere with the normal adjustment of the individual. Four, they are influenced considerably by non-cognitive processes like wishes, motives, desires, etc. unlike normal thinking activity. But, within normal limits all these form part of the normal thinking activity of the individual.

There are, however, certain other forms of thinking which represent wide deviations from the normal thinking process. Such forms of thinking are indicative of psychological disturbances or improper development of the individual. We may briefly examine some of these.

Excerpt from a letter written by Mr. R to his Counsellor. He was diagnosed as suffering from paranoid schizophrenia. He is a 35-year old school teacher.

Dear Sir,

In continuation of my letter I add some of the facts to your notice. The state has to form a people army not for with all the abled bodies irrespective of sex and they have to work for 8 hrs either intellectual about or manual labour according to their abilities.

It is very much regretted that some people are living like animals to get food even in the civilized era for eg., all over India, there are rickshaw pullers. They have to pull the rickshaws from morning to midnight to get food. It is clearly seen that there is no difference between a horse or a bull and a rickshaw puller.

The rural people are illiterate, ignorant and superstitious. The educated people from cities have to go rural areas and enlight them in all respects. At present there is craze for cricket, it is an idle men game. it is a game which is played in the entire day time. Much time is being wasted. It is not an olympic game.

It is better to burn the dead body instead of burying. Burying occupies place. There should be only one type of crematorium in the world.

It is seen that there are different types of marriages according to people's religions, castes, regional customs. At present in the world there are aligned countries and non-aligned countries. Non-alignment is nothing but neutrality. People are thinking that Sun is a God. Sun can be defined as a self radiating Globe but not a burning sphere if it is burning sphere than ash has to fall down.

AUTISTIC THINKING

The term autistic thinking has already been referred to. This represents one of the earliest forms of thinking in the developmental sequence. Very young children demonstrate this as a normal phenomenon but soon outgrow this stage. But some of them fail to outgrow this and remain fixed and arrested at this stage of psychological development. This type of condition is indicative of pathological disturbances.

Typically, autistic children are characterised by a total lack of contact with reality. Such individuals are completely engulfed in fantasy and their concept formation does not proceed further.

It has been found that such individuals are not able to communicate with others. They are isolated in their own world. It has been shown that autistic thinking is brought about by a series of unfortunate experiences and interactions which make the child withdraw into himself and erect strong impregnable defensive barriers against reality. Adult psychotics, particularly with schizophrenia, have been found to exhibit this type of thinking.

OVER-INCLUSIVE THINKING

Yet another form of pathological thinking is known as over-inclusive thinking. It is conmionly found among psychotics, particularly schizophrenia. In fact, over-inclusive thinking has been mentioned as the basic pathology with schizophrenia by psychologists like Cameron. Over-inclusive thinking reflects a breakdown of the established principles of association and logic. The consequence is that any stimulus or symbol produces a riot of association not directed by the normal laws of association and relationships. For example, in a normal individual the word milk may stimulate ideas of white, cow, child, food and perhaps even ice cream. But in an individual with over-inclusive thinking things do not stop here. Very strange associations are given like black, death, etc. Over-inclusive thinking, therefore, represents a chaos in the thought process. It is precisely because of this that the speech of psychotics appears bizarre and strange. Persons suffering from schizophrenia coin several new words (neologisms) because they can combine many ideas which are otherwise not capable of being combined. For example. he may use the word ‘mow’ by combining milk and cow.

DELUSION

Another major form of thought pathology is delusion which is again found commonly in psychotic patients of the paranoid and depressed type. Here, there is no defect with the basic structure of the thought. Logical processes are totally disconnected with reality. They do not respond to objective reality but are entirely,

controlled by internal and subjective reality like anxiety, fears, repressed wishes, etc. A maniac living under a delusion may seriously believe that he is emperor Ashoka and start acting accordingly. His entire thought, life and even behaviour come to be governed by his delusive beliefs and any amount of logical argument fails to convince him. Delusions range widely in their pervasiveness. Some delusions are brief or fleeting and are called transient delusions. On the other hand, some delusions can be very elaborate and may completely engulf the individual. These are called chronic or systematic delusions.

Delusions can be classified into two types, those of grandeur and those of persecution. Delusions of grandeur are characterised by a belief in one's greatness, one's omnipotence of being a chosen individual or messiah, etc. Delusions of persecution show the opposite picture. Here the person feels that he is being harassed, persecuted and plotted against by everyone. He is obsessed with the idea that everybody around is out to get him, harm him, kill him and he is a victim of domestic, national and international conspiracies. The reader may see that even delusions of persecution provide the individual with a feeling of greatness and importance. They give him a feeling of martyrdom. They arise due to a number of factors including childhood experiences, frustrations, a faulty way of life, etc.

In this chapter the reader has been introduced to an understanding of the basic nature of thinking, the process of its development and the variations in such development. Some important theories have also been briefly discussed. Towards the end an attempt has been made to discuss briefly some unusual and pathological forms of thinking. The reader who has read other books on psychology will probably find that this chapter is slightly different and unconventional. The inclusion of topics like dreams in a chapter on thinking is unusual. But you will be able to appreciate the legitimacy of this inclusion because dreams

essentially represent implicit psychological activity involving images, ideas, etc.

Thinking, like learning and perception, represents a form of adaptive behaviour. It functions in close relationship with perception, learning, remembering and motivation. In fact, the process of thinking emerges out of a complex interaction among these. Thought activity grows out of adaptive behaviour and in turn, contributes to adaptive behaviour. Since it arises out of adaptive interaction and contributes to effective adaptation, it may be assumed to be normal. But it also develops out of non-adaptive interaction and contributes to non-adaptive behaviour; therefore, it may be regarded as pathological. It is, perhaps, not possible to make a clear-cut distinction between normal and pathological thinking. In pathological thinking, like delusions, the structure of the thought process is essentially normal. On the other hand, many normal people occasionally experience very momentary delusional ideas which may be classified merely as perfectly normal ambition or a high level of aspiration. Ultimately, as already mentioned, normalcy or pathology of thinking depends on the degree to which the thought processes impede or facilitate effective adjustment and the normal growth of the individual.

ATTENTION

What is meant by attention ?Give an analysis of its nature.

Attention-Attention is an important mental process, without it, other mental processes, like, imagination, learning and thinking etc. are neither possible nor-useful. These mental process depend on it. We can not think about anything unless we centralize our attention on it. Further, it is also a selective process. When we focus our attention towards any stimulous, it means that we have removed our attention from other stimuli. It is due to this, that at one time we can only pay our attention towards one object or stimulous and not more than one. Our mind selects only one stimulus which is best suited to it, for paying attention. Attention

also depends on one's interest. One pays his attention on that very thing, in which he is interested. If one does not take interest, he cannot pay his attention on any of the subject.

NATURE OF ATTENTION

If we deeply think over about attention, we find that, it is a mental process and not a mental power. Modern Psychologists have also procud that attention is a mental process. In fact to concentrate our consciousness on any particular stimulous, is called as 'attention'. There is a close relation between interest and attention. It is because of these fact that we centralize our attention only on that particular object in which we are interested. Due to this characteristic, attention is called a selective process. There is great intensity of cognition in attention.

Although consciousness and attention are very much connected with One another, but these two are not the same. The field of consciousness is wide, while the attention has got narrower field. This fact can be proceed by an example, when we go to office, we are courcious about other colleagues, the sound of the clock, we reply to others and perceive so many things which come to us, but our entire attention remains at the work in which we are interested. In this way the field of attention seems narrower in comparision to Consciousness.

It is fact that in certain conditions attention does not work. For example, if our organism in weak or our since organic, are diffective, we can not, fix-up our attention at any object.

Definition of attention - Given below are a few definitions of attention

(1) **Munu-** according to Munu "Attention, from whatever angle we Consider, it is in the last analysis a motivational process,"

(2) **Stout -** According to Stout "Attention in simply connectioji so for as it requires for its satisfaction further cognisance of its subjects".

(3) **Mc Dougal**-According to Mc Dougal, "Attention is merely conation or strieing considered from the points of its effection cognitive process"

Kinds of attention- different types of experiments that have been made on different people of different age groups, have revealed its following Types :

(1) **Involuntary**

Some times it is found that our consciousness automatically gets fixed-up at certain objects. The cause of fixing-up our attention is "attraction" which lies in the object itself. In this Way when our consciousness is centred automatically at any object. It is called involuntary attention For example, if we are busy in a work and we hear the song which we like so in this situation our attention naturally falls on the song. So the cause of our paying attention at the song is its attraction that draws our attention towards itself. This involuntary attention is called by other names also, such as spontaneous and habitual attention.

(2) **Voluntary Attention**

In this type of attention willingly centre our attention at a particular object or stimulus to achieve our aim, This type of attention is also called as active or triabed attention, because when we try to willingly pay our attention to wards of the stirmulous it requires trials. Without any trail, it is difficult to centre our attention. The Voluntary attention develops with the growth if age. It is the developed state of attention.

HABITUAL ATTENTION

Mostly it seems that when we take up any work, we face up so many difficulties in learning or doing the work. This reason is this, that we are not interested in that very work. But the due to certain Reason have to learn the same work, and by continuous practice on the same Work, our interest in that work develops, and it forms a habit. In this type of attention trails are not needed.

Characteristics of Attention to know completely anything, it is very essential that first of all we should know its characteristics, because characteristics of anything helps in knowing its nature, we are giving here the following characteristics of attention

(1) Attention of changing

Attention of is always changing. We can not centre it on any particular stimulous for ever or for a long time. When we are much interested in any stimulous, we pay much attention towards that thing, but when we are disinterested, we do not pay any attention. It is also a fact that out interest does not remain the same. For example, at certain times we are interested in reading novels so we pay much attention in reading the novels. But after some time, we do not pay much attention in novels, because our attention is diverted from novels towards paintings.

(2) **Limited field**

The field if attention is very limited. 1t means that at one time we can centre our attention only at one thing or the part of the thing. This limitation more or less is based upon the particular man, age and the nature of the stimulou For example if there are two or more things, and they are not related with each other, so here in this case our attention is centred at only one thing at a time. But on the other hand if they are associated with each other, we can centre our attention on both the things. So in this way the limitation of attention some what depend upon relation between the things

(3) **Active centre**

Attention is always an active centre of our experience. ft is because of this fact that those objects on which we centre our attention remains always in our Consciousness as fresh as ever and clear, due to which we are able to know them clearly and distinctly.

(4) **Attention is selective**

It is also ture that attention is selective. The cause of this fact is this, that the field of attention is very limited. So we are helpless to centre our attention at many objects at the same time. So we select one or more than one object at one time to give proper attention. This selection is based on the external or internal condition if the attention does not remain in our consciousness for a long time. This object is removed from our when we pay attention at other one.

(5) **Attention is Continuous**

The process of attention is continuous. It does not stop for a while we are always busy in paying attention at one or the other object.

(6) **Attention increases the clearity of the object**

The objects become more clear when we pay our attention on them so we are able to know even their secret facts and it increases the informance of the object before us.

(7) **Attention is indivisible**

According to modern psychologists attention is indivible. It is wrong to say that it is divisible. It is indivisiblity can be shown on the basis of certain experiments. What we call the divisibility of attention is only a change in attention.

(8) **Bodily adjustment**

When we centre our attention at any stimulous, our bodily organs, like ears, eyes, nose, head etc., came in a particular shape, and there courses an hormony between the stimulous and the situation. At certain condition of attention our body too comes in a particular shape. So in this ways when the organs of the body comes in a particular condition, there creates and excitement, in our nervous that producess the feeling of readiness, and by the help of attention, we bring some ‘ajustment between motor nervous and the sensory nervous in Central nervous system.

(2) What do you mean by interest? Explain the relation between interest and attention. What are the condition of attention? Explain fully.

Meaning of Interest

Interest simply letts relation between 'the subject and object, or in other words, we can say that by ihe help of interest one can immediately know, what type of rela tionship lies between the subject and the object. Interest is a men tal structure showing relation and not the mental process. The source of this mental structure is our experiences. Our interest iowards anything grows after we have perceived it. Further in erest depends mote or less upon our liking and disliking of any thing. For example if we like painting, we take much interest in it, while if we do not like reading the novels we never take interest in 'reading the novels, liking and disliking is a type of experience, and these experiences become the part of mental structure in the form .of mental disposition. It is also very essential to mention here that our innate motive has much hard in the farming of mental structure. This is so because in the beginning of child shows and behaviour only when he is motivated by these innate motivation. Further he takes interest in those things which satisfy his curiosity.

Kinds of interest Mostly there are only two types of interest:

(1) **Inborn interest**

When we show our interest in any object due to instrncts and innate motives; it is called as inborn interest.

(2) **Derived interest**

Some times it seems that we take interest in any object due to our habit or sentiments. This type interest is called as derived interest. These derived interests are based on inborn interest.

Relation between attention and Interest

Generally it is said that our attention is based on interest, as we centre our attention on those very stimuli in which we are

interested. But from the psychological point of view it is not correct. The psychologists have got different views in this connection. The following three views are aid down by the psychologists:

(1) **Attention is based of interest**

according to some psychologists, we centre our attention only on those objects in which we take interest but if we are not interested in any object, we do not pay any attention. So in this way our attention is based on interest.

(2) **Interest is based on attention**

This view is against the first view. The followers of this view says that unless we centre our attention towards any object, we do not take interest in that 'object, for example if we pay more attention in painting, we can learn painting quickly and our interest will develop towards painting.

(3) **The two sides of a coin**

The third group of psychologists maintain that interest and attention arc the two sides of a coin. It means that they live together within an individual and also grow together within an individual. Or we can says in other words that attention and interest are the two parts of an individual.. According to Mc Dougall, "Interest is latest, attention in interest in action."

Condition of attention

When we deeply think about attention, certain type of question is raised in our mind, such as why man centres his attention towards a particular thing? Why two persons take interest in two different things although they like in the same. environment? Now these are certain reasons that is why two persons,. living in same environment, pay attention at different objects. These reasons are called as condition of attention. These conditions are of two types :-

(1) **External conditions**

The external condition can have the following characteristics

(a) **Novelty**

Mostly it seems that we centre our attention on those things which seem to be new. For example, when a child seen any new toy, it at once centres its attention on that now toy.

(b) **Size**

The objects having big size or peculiar size attract pur attention at once. This thing is mostly found in the case of advertisements. Due to this fact businessmen generally used big. advertisement boards to attract our attention.

(c) **Definite form**

The Objects which have definite form attracts our attention immediately. But those things have no form. or shape are unable to attract our attention.

(d) **Contrast**

We pay more attention towards the contrast things. For example, a boy who, wear white shirt and black pant attracts immediately our attention.

(e) **Movement**

We pay more attention towards speedy objects, while it is not the case with slow speed, or static objects, we pay immediately our attention on those vehicles which run fast.

(f) **Clarity**

Clarity of objects is also the important condition of attention. In those things which are clearly visible, we centre our attention immediately towards them, but on the other hand, one cannot pay any attention to those objects which are not clear to him. For example, one pays more attention to those painting, which are clear to him and he understands them

easily, but if the paintings are not clear to him his attraction is diverted towards other things.

(g) **Change**

Change is a necessary condition for paying- attention at any object. Those things which suddenly change, attract our attention immediately than those which remain the same. For example, if one begings to speak loundly all of sudden, we atonce fix-up our attention on him.

(h) **Repetition**

When we repeat again and again the same thing, we pay more attention in drawn towards that very object, for example. When a child repeatedly learns a lesson, his attention ‘naturally attracted towards that sams lesson.

(i) **Intensity**

Intensity of the stimulous also attracts immediately our attention towards itself. For example, the sound of the Bomb and gun attracts easily our attention.

(j) Position-position also counts much in the case of attention, our attention easily goes towards that person who holds a remarkable position in the society or in the institution. For example our attention immediately goes at the principle of an institution rather than the teachers. It is because of the fact that he holds the biggest position in the institution.

(2) The internal conditions of attention— it internal conditions of attention are as follows.

(a) Interest-interest and attention both are closely related with each other. So due to this fact, those things in which we are more interested, we pay our attention immediately on those very things: For example if one is interest to study Psychology, one pays more attention in studying Psychology.

(b) Habit-it also counts much in connection with attention. It is found that when we repeatedly do any work, it forms a Habit, and this habit easily attracts our attention towards itself. For example, man who is habitual of seeing picture, pays more attention in seeing picture.

(c) Attitudes

Our attention also much depends upon attitudes of the man. Each man has got two types of attitudes, negative and positive. These two are Opposite with each other. Positive attitudes are directed by attuation. So these positive attitudes get success in attracting one's attention.

(d) Motives

Although more or less each of our behaviour is directed by motives, these motives are always present in any form in us. So when these motives are excited, our attention at once goes towards them.

(e) Curiosity

When we are much curious to understand any object, we pay our attention on that object. Curiosity is one of the most important factor for attention with out curiosity we can neither pay our attention nor we can know any thing,

(f) Past experience

We have seen any object previously and if again appears before us, it is but natural that our attention will go at once towards that object.

(g) Needs

Needs of a man attracts his attention tow itself. For example, a man who is in great need of money he ill always pay his attention to think the ways by which he can get money.

(h) Meaning

When we clearly understand the meaning of the subject, we pay more attention in learning the subject but it we do not understand its meaning we do not pay any attention in learning to that thing.

CHAPTER - X
INDIVIDUAL DIFFERENCES

1. Explain the meaning of individual differences. In what may an individual differs from one another

MEANING OF INDIVIDUAL DIFFERENCES

Although it is true that all the human-beings are same in appearences, but when we go in deep, we find that each individual differs from one another. Every person is unique in himself. He has some peculiar abilities which other one does not have. On the basis of these peculiarities one can be easily distinguished from others. According to skiner, "We think of individual differences as including any measurable aspect of the total personality." Thus it comprehends all measurable aspects of human personality.

ABILITY AND OTHER TRAITS

The unique characteristics of the individual are the cause of his ability and disability. It is often seen that some persons do a work quickly and efficiently while the other ones are not able to perform the work so quickly and efficiently. This difference is found on the basis of different amount of the required abilities, it is also seen that one person becomes nervous to face any difficult situation, while the other one remain calm in the same situation. It is also found that there are differences in liking and nature of the individual, e. g. one child is interested in studying geometry while the other one takes interest in painting. So that teacher teaches the student geometry who, takes interest in painting, he can neither follow any thing nor takes interest in learning the geometry. The same result will come cut if we ask for painting to the student who is interested in geometry. So education proves beneficial only if we give them education according to their mental ability and interest.

MEASUREMENTOF INDIVIDUAL DIFFERENCES

The individual differences are measured by means of

psychological tests. Our efficiency is dependent upon intelligence. The intelligence can be measured by various psychological tests, made by different psychologists. Here we are not going to deal with the intelligence test but only the intelligence as such. Those persons who grasp any difficult problem in a short time and without making any delay are called as genius. Their I. Q. is very high. But on the other hand, those who are unable to grasp or solve even simple problems are called as dull or feeble minded their. I. Q. is very low. This shows that people differ from one to another on the basis of mental ability. This intelligence is nothing but the mental capacity. There is no scientific definition of intelligence.

MENTAL AGE

Different psychologists like Binet and Siman established certain types of tests for children of different age-group with the help of these tests we can know the mental ability of a child. Suppose a child whose actual age is six (6) years but he solves easily all the questions of the test which is meant for 8 (eight) year old child, he is in advance by two years mentally, or he is mentally 8 years old. On the other hand there may be a student whose actual age is 12 years, but he parforms the test which is meant for 8 years. Now in this case be is called as mentally weak. He is retarded by 4 years and so his marital age is 8 years instead of 12 years. Mental age shows the dullness and brightness of the child.

INTELLIGENCE QUOTIENT

The mental age is not a very correct scale of measuring the brightness and dullness of the child. It is Intelligence Quotient that measures correctly the mental ability of a child. In the case of a child who is six years old, the retardation of 2 years is very serious, whereas in the case of 14 years old child the retardation of 2 years is not a serious one. The gap between mental age and actual age is filled up gradually with the growth in actual age. Intelligence quotient expresses better the brightness and dullness

of a child. The formula of Intelligence Quotient is as follows:

$$\text{I. Q.} = \frac{100 \times \text{Mental age}}{\text{Actual age}}$$

Now example, a child whose mental age is 8 years and the actual age is 6 years, the I. Q. of the child will be 133. Again a child whose mental age is 8 years and the actual age is 12 years; the I. Q. will be 66. So on the basis of Intelligence Quotient we can say about a child whether he is intelligent or deligent.

The under-mentioned table shows the mental ability of a child:

Above 140	-	Genius
130-139	-	Very superior
120-129	-	Superior
110-119	-	Bright
100-109	-	High normal
90-99	-	Below normal
80-89	-	Dull
70-79	-	Inferior
60-69	-	Feeble minded
Below 60		

AGE OF THE INDIVIDUAL

The mental ability of an individual generally improves with the growth in age from the beginning or from the childhood to early youth. But on the other hand this .ability begins to decline gradually as he becomes older and older.

Sex differences in ability- In olden times it was the general view that women were intellectually inferior to men. But the tests showed that women are intellectually equal to men, and the girls slightly superior to boys in early days of the childhood. But on the whole they are equal to men According to Makneimer and Terman, women have greater skill in memory white men have greater motor ability.

CONDITION OF THE FAMILY

The occupation of the parents and the size of the family that comes under family condition are closely related with the I. Q. of the child. It is clearly seen that the average 'I. Q. of the child is higher whose parents hold a respectable and responsible posts, but the parents who hold a low post, their 'children's I. Q. is low. They are not well cultured as the former ones. But their are exceptions too. Further it is also seen that the I. Q. of the children is low whose family is large in size, bur these who are mentally developed their family is small. In size, they restrict on the size of the family. But in this case also there are exception.

RACIAL AND NATIONAL DIFFERENCES IN ABILITY

Racial and national differences are also one of the cause for difference in mental ability of an individual. There are differences in education, culture, language, social environment and economic background between different nations. On the basis of these causes the people of one nation feel superior to that of another one. e. g. Europeans feel themeselves superior than the Negroes.

PHYSICAL BASIS OF MENTAL ABILITY

It is said that one man who has larger brain is more intelligent in comparsion to the man who has small brain. Although this opinion is not of a great importance, but anyhow it is a fact.

Now on the basis of the personality and interest, people differ from each other, e. g. one man is introvert and he takes interest in thinking and imaging in himself rather than talking to others. Om the other hand the extrovert does not like to think and to imagine, he takes interest in talking with others. He is habitual of making friends. So in this way no two persons are alike, they differ from each other.

USES OF INDIVIDUAL DIFFERENCE

There is doubt that the diffe rences in ability and nature of

man are of great importance in our life. If all men were the same it nature and mental ability, in would create difficulty in giving the different types of education and in fixing up them in different jobs or works. If all the persons were the same, it would be difficult to make any progress either in our personal life or towards the nation. The greates importance of the individual difference is in the field of education. If the teacher teaches according to one's nature and ability the child takes much interest in learing the subject by which can make progress in life.

DEFECTS

Although individual differences are of importance, yet it has also got some defects, as follows:

(1) It has difficult to test mental ability and nature individually of all the children.

(2) It is also difficult to teach them according to their nature and ability. One cannot teach separately to each of them.

(3) When one does not get either education or work according to his nature and ability he gets frustrated.

CHAPTER - XI
FRUSTRATIONS AND CONFLICTS

(1) Define conflict? What are its causes?

The modern age is the age of conflicts. Conflicts take place a result of inconsistencies in our social behaviour and environment in which we are placed. Actions that are based on impulses cannot always be fulfilled and allowed to take place. Once these actions get frustrated and do not take place some sort of conflict does occur. The instinctive actions which are involuntary are the primary actions and they have to be modified according to the requirements of the environment and the society. They lead to conflicts also. Once we are not able to reach a particular decision or are not able to do a particular thing, a sort of tug of war goes on in our internal world. These conflicts influence our personality and our social behaviour. Boring and others have defined in the following words:

"The conflict has been defined as a state of affairs in which two or more incompatiable behaviour trends are evoked that cannot be satisfied fully at the same time."

Munn has also defined it in the following terms

'The tension or stress involved when satisfaction of needs is thwarted'', is called tension.

An example may ho illustrate a conflict. A young boy is deeply in love with a young girl, and the marriage is to be performed soon. In the mean while the young boy is offered a job in a foreign country where he has to reach without delay- The young lady is not in a mood to go to the foreign country because of the parents. In such a situation the young boy shall be faced with a conflict of joining the job and marrying the young lady. This situation would be a conflicting one. In conflict emotions are involved. That is why they lead to adverse effect on mental health and personality.

CAUSES OF CONFLICTS

Conflicts are caused by various factQrs tnd sources. Because of the development and the complex nature of the society, the sources and the causes of the conflicts are developing. Tbese socurces and causes differ according to age, social status and social conditions. Normally followings are the important sources and causes of conflict

(1) FAMILY COUFLICTS

In a family there are members of several generations. The attitudes of these .memb differ from one another. Sometimes the members of the same generation because the certain psychological factors do not have the same views. This incompatiability of the views leads to family conflicts. In family, the conflict of dominance and the conflict of the submissiveness takes place. Some children want to dominate while others have to submit. it is a natural situation. They lead to disturbance on mental health and also bring about frustration.

(2) SEX CONFLICTS

Sex is the most important cause and sou:ce of conflict. It is not possible to get full satisfaction of sex ip the present day social world which is circumscribed by a large nu of values restrictions, rules and taboos. There are physical factors also. All these things lead to sex conflicts as envisaged by Boring and others: “\ sexual functions are often causes of severe conflicts because of the way they are regarded in our cuhure.

(3) CULTURE CONFLICT

In our cultural pattern there are several types of norms. These norms are not always compatible and result into conflicts. For example in our society on one hand a person who is rich is respected in every way and on the other, he is asked to lead a pious life and earn money through proper means. These two things always do not go together and the result leads into conflicts.

TYPES OF CONFLICTS

Several experiment were carried out by various psychologists in order to test the conflicts. These conflicts as we all know are caused because of our social interaction. Once the social interaction and the relationship is incompatible it leads to conflict. As a result of these experiments, the conflicts have been classified under the following three types

(1) Approach—approach conflict
(2) Avoidance-avoidance conflict and
(3) Approach-avoidance conflict.

(1) Approach-approach conflict

Once two objects having equal attraction are present as such a conflict arises. For example a boy may be faced with two means of recreations-going to a picture and also going to theatre. Under the circumstances he shall be faced with a conflict but it shall soon be resolved. Such conflicts are short lived and are easily resolved. . Since they are sudden and short lived. They do not have any serious impact on the mental health of the child. Once a person has o for one thing the other object of conflict or other attraction is lost.

(2) Avoidance-avoidance conflict

When a person is faced with two such situations which have to be avoided, he is faced with the conflict of this category. It is like being on the horns of dilema or being between scylla and charbig. Since both the situations are difficult, he avoids both the things. It may be illustrated with the help of an example. A worker may be physically weak and it may not be possible for him to undertake the work in factory where he is employed. He therefore, because of his physical debility does not want to go there. But if he does not go there he shall be faced with the problem of earning his livelihood. He can give up neither of the two. It is quite possible that he may leave the job in the factory and because of his inability to feed his family may commit suicide or run away from the house, that way he shall be avoiding both the unpleasant situations.

(3) Approach-avoidance conflict

In such a situation, a person wants to do a thing because that work shall give him something gainful but the result of that work may be very injurious for him. Consequently he has to face with a conflict. For example a person may be hard up and he may be anxious to earn money. For earning money he may be tempted to commit theft or robbery, but he is afraid of the consequence of theft or robbery and so a conflict dev in him. It is not possible for a person to come out of such a conflict. Usually such a repressed desire goes down into the un-conscious level of the mind and causes abnormalcy in our behaviour.

IMPACT OF CONFLICTS

Conflicts have a serious impact on our personality. They are responsible for several of our abnormalcies. In the modern psychology every attempt is made to give a serious thought to conflict and study them properly because conflicts can cause great damage to the mental health. This impact would create abnormal individuals who shall ultimately spoil the peace of society.

FRUSTRATION

Q. (2) what is Frustration? What are the causes of Frustration? Distinguish between frustration and conflict?

Frustration-defined

Every individual has large number of needs, desires and requirements. These needs and requirements. although they differ according to age are present in people of all ages and social set-up. These desires and needs require satisfaction. But due to various factors they are not fulfilled. They are thwarded and remain blocked. These unfulfilled desires and unsatisfied need lead to frustration. Munn has defined it in the following terms “State of organism resulting, when the satisfaction of motivated behaviour is rendered difficult or impossible” is called frustration, **Frustration** is sometimes common but sometimes it is. uncommon. ery individual wants a job, but if he does not get it, it is a common

frustration. But it is quite possible that a person may like to become King over-night. That would be an uncommon frustration because of the abnormal desire. How ever the impact shall be the same.

Causes of frustration

Factors that lead to non-fulfilment of desires and means are the cause of frustration. They may be studied under the following heads

(1) Physical causes of frustration

It is not difficult to have full control over the physical and the material factors. Apart from it the material and the physical wealth is limited. All of us cannot get it because of the faulty social system. On the other hand some times physical causes like rain, fire etc. may destroy normal condition and lead to non-fulfilment of needs and desires. Such causes are termed as 'Physical causes of Frustration'.

(2) Physiological causes of frustration

Body has a limited capacity. It is not possible for us to work canstantly and fulfil our desires. Some of us also suffer from certain physical drawbacks and disabilities. They are responsible for non-fulfilment of their desires and lead to frustration.

(3) Mental causes of frustration

Everybody is not mentally the same. Some are more intelligent while others are less. Because of this difference some people are not able to achieve what they actually want. For example a person may be very anxious to stand first in the M. A. Examination of the University, but because of the mental difference he may not get it. That would cause dissatisfaction.

(4) Social causes of frustration

Our society is based on certain norms and rules and the members of the society have to work according to those norms and rules. These norms and rules lead to non-fulfilment of our

desires and they cause frustration. A person may be anxious to marry a particular girl, but because of social situation he may not be able to fulfil his desire. That way he shall suffer from frustration.

Impact of frustration

Frustration leads to disturbance in our psychological and mental life. As a result of frustration, maladjustments take place and it has adverse effect on the mental life. This mal-adjustment expresses itself in form of defence mechanism.

DEFENCE MECHANISM

Q. (3) What are various types of Defence Mechanism?

Defence Mechanism

Conflicts and frustration are to be found in every man's life. On the one hand these can lead to abnormalcies and on the other cause serious impact on the personality. In order to save oneself from the effects of conflicts and frustration, people resort to certain ways. Since they are ways and means to defence a person against the impact of conflict and frustration, they are known as defence mechanism. These are mental mechanisms and they help a person to bear the shocks of the failures and maintain balance and organisation in the personality. Without the presence of these mechanism, one would become abnormal and lose mental balance. These are ways to escape from the serious situation. These defence mechanisms may be described in the following words:

"Every individual wants self-acceptance and acceptance of himself by others. It is the most powerful force in every human-being from an early age, and it is the main spring of a large part of his behaviour. Our ambitions are greatly influenced by these. If this need is not satisfied i. e. if the individual does not receive this acceptance because of his achievements and personality, he will try to obtain recognition and acceptance through other means. Such means methods or devices which he employs to overbore his defeats, failures are called. 'Mechanisms' because they defend his

esteem, prestige and dignity against defeats and failures, they are called, 'Defence Mechanisms'."

Main kinds of Defence mechanisms

The main kinds of defence mechanism are as follows:

(a) Rationailsation

In this mechanism we unconsciously give reasonable explanations for our behaviour. We do all this, in order to justify our behaviour and save ourselves from falling in the esteem and respect of others. A teacher who does not teach in the class, may say that he does not believe that mere teaching of the book is sufficient. Students need be taught other things as well. By such explanations, he clouds his motives and failures. The reasons that are advanced in rationalisation are invariable untrue, imaginary and connected. It has generally been seen that students who do not study, go into parks and such other places and pass their time there. Whenever somebody asks them, they say that it is because they get there proper atmosphere for study. Those who do not work very fast invariably advance the argument 'slow and steady wines the race' This is not a very correct proverb for those who do not believe in doing things quickly and efficiently.

If the process of rationalisation does not start, one is likely to start thinking that a person is not capable. Such a man shall not only go down in his esteem but also in the esteem and respect of others. Such a thing is dangerous for proper organisation of the personality. It can lead to imbalances, disorganisation and have adverse effect on health. This is a good defence mechanism for putting up the things.

(b) Sublimation

Once we detach the power of inspiration from the achievements of normal object and employ it for the achievement of some higher objects, there is the defence mechanism called 'Sublimation'. This is the best way of defending oneself against

loss of prestige and respect and achieving better position in society. It also leads to proper development of the personality. It is also useful in life particularly social life. Generally those who are conscious people and do not find satisfaction of their sex desires sublimation may lead them to other activity like painting, music etc. Some of the great men became great men only. through the process of sublimation. Nepolion could become great because he was short statured and gearded at in his school. The Famous Indian Saint Goswami Tuisidas was frustrated in his life for his wife and he sublimated it towards love of the God and ultimately became the most important saint. It we analyse the internal lives of many great writers and painters we will find that there is some element of dissatisfaction and frustration which they have sublimated.

(c) Repression

When two conflicting desires crop up, we suppress one and give expression to the other. This process is un conscious. When we do it consciously and it is called as 'suppression'. As a result of repression one is able to get relief from conflict and frustration. But this relief is only temporary and is shortlived. It does serious impact on the personality and makes a man either forgetful or certain other disabilities.

(d) Projection

It is, in fact a form rationalisation, through which we try to put up execuses and explanations for our failures, and faults. In this process, we put the blame on others. For example a person who fails to compete at the examination blames the authorities who conducted the examination for favouritism. The famous proverb 'a bad workman always quarrels with tools' is the best example of projection. It may be described in the following words :

"When responsibility for our failures, defeats and weaknesses shifted on to others, situations tools organisations or other persons we are indulging in projection."

(e) Displacement

In this process we pass on our insult, humiliation and anger to others. It is 'an expression of our emotions in a situation other than the one which aroused it." Displacement takes place because we are not able to express our emotions when we want and so we express them at some other place. In this mechanism. We direct our emotions against those who are not at all our real objects. It may be further explained with the help of an illustration. A business executive is rebuked and humiliated by his boss. It is not possible for him to retaliate. He therefore passes on his anger and annoyance to his subordinate. No doubt he shifted his emotions and expressed it but it was not done before and against the person who was really responsible for it.

(f) Introjection

This defence mechanism is said to be a good method for overcoming our weaknesses, defeats and failures. Since it is not possible for the person who has suffered defeat to become so powerful as to retaliate, he or she treats the external object as a part of his own personality. It is a type of 'fantasy'. Generally children indulge into it. Since it is not possible for a person to become as powerful as the ruler of a nation, the child treats that ruler as a part of his personality. That is why we generally called big things as 'our country' or 'my country', 'my party', or 'my leader'.

(g) Identification

When we treat ourselves as the most power ful or respected man we indulge in defence mechanism known as identification. It consists in conjoining oneself to the achievements, successes and qualities of another individual or groups and feeling joy in these factor This includes heroworship and developing linking for great men in our personality due to failures defeats and weaknesses. To day young persons put on dresses, burns, hair and other attirements of the film personalities and thereby identify themselves with them.

While identification is a good mechanism to overcome inferiority complex. sometimes it is injurious as it leads to forgetting the traits of one's own personality. Once a person loses his grip over one's own personality, he is likely to degenerate into a weak man. He can also lose grip over his own qualities and may ultimately lose them.

Other types of defence mechanism-Apart from the defence mechanism enumerated above, people also indulge in certain other mechanisms in order to hide their faults and cover up their defeats. These mechanisms are as follows

(i) Fantasy of day-dreaming

Once a person is no able to put up with the failures, shortcomings and the defeats of his life, he starts indulging in imaginary activities and day-dreaming. Fantasy and day dreaming is part of more or less every individual but it is a more expressed at certain stages of development such as fantacy adoiscence etc. In Fantasy and pay-dreaming they find satisfaction of desires and thereby give expression to conflicts and frustration. These mechanisms are good for weaker person and they deal with various aspects of life. Once a person is able to develop determination and resolution they fantasy away and help him to face the realities of life.

(2) Compensation

If a person finds himself weak in certain qualities or in one aspect of life, he compensates it by developing other qualities and traits. Thus he makes good his weakness and shortcomings. For example Bal Gangadhar Tilak was a sickly person in his early days and people used to laugh at him. This made him develop determination and he became a very strong man through exercises. He compensated his weaknesses. Helen Keller was born deaf and blind. She overcame these handicaps and lead more or less a normal life. Generally we see that people start putting on very good traits.

They attack others on the basis of their traits.. They do it in other to make up their deficiency.

(3) Suppression

This is a form of repression. Once we try to give up and leave some unpleasant memories and desires, we indulge in suppression. This defence mechanism is carried out consciously. It is in fact a part of selective conflicting under which we forget painful suppressions and take up pleasant ones. Sometimes in order to forget unpleasant things, we give them up and take up. the pleasant once and concentrate on them.

(4) Withdrawal

In this defence mechanism, we withdraw from a situation or from a position in which we are likely to be rebuked or disgraced on account of some failure or weakness. Usually people who live in solitude are such type. These people have a weak personality and weak mind. This is not at all a very health defence mechanism. Due to withdrawal we lose sight of the social environment and this lack of social environment has an adverse effect on our personality.

(5) Negativism is a defence mechanism in which we do a thing which is just opposed to what we have been asked to do. It is in fact a negative reaction. Such a behaviour takes place on account of behaviour obstinacy or other unhealthy tendencies. Such a behaviour is generally seen in children. Of course the adults and grown up people are not completely from it but negativism finds more place in small children. Generally those children who have been given too much of protected behaviour extra effection indulge in it more than others. It leads to development of superiority complex which is not at all a healthy trait. It also displays lack of confidence.

(6) Reality Evasion

This is in fact an escapist defence mechanism in which we try to escape the reality, for fear of being criticised or failing to live up to high expectations. Such people go on postponing their decisions for tomorrow and tommorow It is also the result of physical weakness, old age, lack of confidence and intelligence. As a result of reality evasion people fail to reconize the factual grounds and This is not at all a healthy thing and has serious impact on mental health.

(7) Reaction formation

In this defence mechanism we not only give up undesiracle tendencies but also in reaction adopt an opposing and contradictional tendency. Generally, the people who are extremely guilty pose about their being great men with higher virtues and truthfulnesss. It has generally been seen that:the posing people indulge too much in religious activity. Similarly who are very sexually weak and corrupt undertake several religious activities. Even parents who are very fond of their children award them very severe punishment. This is a reaction to the extreme love. Reaction formation can be a strong deterent against unhealthy prejudices and harmful Conditions.

(8) Escapist mechanism

The mechanisms that we have enumerated above are generally defence mechanisms. Through these mechanisms we defend our weaknesses. Run away from reality or reality evasion mechanism is the only mechanism which can be termed as escapist mechanism. But the fact remains that there are certain escapist mechanisms. The vital differences between the reality mechanism and escapist mechanism is that while in the former we indulge in adjustment while the latter make us run away and withdraw from environment in which we have to adjust. This is not at all a very good mechanism because we live in the society and the social environment. Escape is no solution. it is only withdrawal which can put our mental health in geogarphy.

CHAPTER XII
PSYCHOSOMATIC DISORDERS

These disorders are characterized by the manifestation of physical or somatic symptoms which are thought to be caused by emotional factors.

CLINICAL FEATURES

1. gastrointestinal - peptic ulcer, anorexia nervosa etc.
2. cardiovascular - cardiac neurosis, hypertension, angina pectoris etc.
3. respiratory - bronchial asthma.
4. urogenital - impotence, frigidity, menstrual disorders etc.
5. dermatology - urticaria, hyperhidrosis etc.
6. endocrinal - thyrotoxicosis, diabetes etc.
7. musculoskeletal - RA, tension headache.
8. vasomotor - migraine.

ETIOLOGICAL FACTORS

1. Neuroendocrinal Theory:

The autonomic nervous system is influenced by other parts of nervous system such as limbic system and the endocrinal glands like anterior pituitary, adrenal gland etc. complex inter-relationships of these various structures there will be translation of the conflicts arising from the problems of everyday living into abnormal physiological functions and tissue damage.

2. PSYCHOANALYTICAL THEORY :

According to this theory, the basic underlying defect is the weakness of the ego, which is that aspect of the self which helps an individual to face realities of life.

TREATMENT

Psychotropic drugs, psychotherapy, behaviour therapy, biofeedback etc; should be given.

PSYCHNEUROLOGICAL DISORDERS

These are a group of disorders which are sometimes described as minor. The patient symptoms do not interfere with judgement.

TYPES OF NEUROSIS

1. Anxiety:
   It is characterized by an anxious and apprehensive overconcern often extending to panic.

ETIOLOGY:

1. Genetic factors
2. Endocrinal factors: there is increased in secretion of adrenalin.
3. Personality: persons with anxious are more prone for it.
4. age: common in young adults.

Clinical Features

1. Physical : Paplpitations, shortness of breth, headache, blurring of vision, excessive seating, elevation of blood pressure.
2. Psychological, worries, nervousness, apprehension, irritability, difficulty in concentration

Management :

1. Drugs : benzodiazepines, diazepam etc
2. Psychotherapy : supportive psychotherapy gives relief from symptoms.
3. Behavioral Thepary : relaxation, yoga and meditation etc are helpful.
4. Biofeedback techniques have been used

CHAPTER - XIII
CHILDHOOD PSYCHOSIS

Psychosis in children, as in adults, can be either organic or functional in orgin.

Types of Functional Psychosis

1. Infantile Autism

Etiology

1. Genetic factors
2. Language : infantile autism is due to basic defect in language development of perception.

Clinical Features :

1. Autism : Lack of responsiveness to other persons is called autism.
2. Speech and language defects
3. Insistence on wearing same clothes

Treatment :

1. Behaviour Therapy
2. Neuroleptic drugs : Haloperidol
3. Special Schooling

FUNCTIONAL ENURESIS

It is the repeated involuntary voiding of urine occuring after the age at which continence is usual, and in the absence of any physical disorder.

Etiology :

1. Genetic factors : are thought to act through a delayed maturation of parts of the nervous system

2. Smaller capacity of urinary bladder
3. Poor toilet training
4. Environmental stresses

Clincal Features :

Enuresis may be nocturnal, diurnal or both. It is termed primary if there has been no preceding period of urinary continence for atleast one year, or secondary if there has been a preceeding period of urinary continence for this duration.

Treatment :

1. Counselling of parents
2. Bladder training

CHAPTER - XIV
ALCOHOLISM AND DRUG ADDICTION

Alcoholism also known as " alcohol dependence ". Alcoholosim is a chronic, often progressive disease that can be fatal.

Causes :

1. Genetics : Certain genetic factors may cause a peson to be vulnerable to alcoholism or other addiction.

2. Emotional state : High levels of stress, anxiety or emotional pain can lead some people to drink alcohol.

3. Psychological factors : Having low self esteem or suffering from depression may make you more likely to abuse alcohol

4. Social and cultural factors : This factor also may lead to alcoholism.

Clinical Features :

1. Liver Disorders :

Drinkign heavily can cause tyou to develop alcoholic hepatitis, an inflammation of the liver. Signs and symptoms may include loss of appetite, nausea, vomiting, abdominal pain and tenderness, fever, yellowing of the skin (jaundice) and sometimes mental confusion.

2. Gastrointestinal problems :

Alcohol can result in inflammation of the lining of the stomach (gastritis), which can lead to tears in the upper part of your stomach and lower part of your Oesophagus. Alcohol can also interfere with the absorption of the B Vitamins.

3. **Cardiovasclar problems :**
   Excessive drinking can lead to high blood pressure and damage your heart muscle (cardiomyopathy). These conditions can put you at increased risk of heart failure or stroke.

4. **Diabetes Complications :**
   Alcohol prevents the release of glucose from your liver and can increase the risk of your blood sugar falling too low (hypoglycemia)

5. **Sexual function and menstruation**
   Alcophol abuse can cause erectile dysfunction in men. In women, it can interrupt menstruation

6. **Neurological Complications**
   Excessive drinking can affect your nervous system, causing numbness of your hands and feet, disordered thinking and dementia.

7. **Increased risk of cancer**
   Chronic alcohol abuse has been linked to a higher risk of cancer o the oesophagus, larynx, liver and colon.

Treatment :

1. Drug treatments :
   An alcohol - sensitizing drug called disulfiram (Antabuse) may be a strong deterrent

2. Psychological support and psychiatric treatment :
   Group and individual counselling and therapy support recovery from the psychological aspects of alcoholism.

3. Detoxification and withdrawal :
   Treatment may begin with a program of detoxification, usually taking about four to seven days.

DRUG ADDICTION

Drug addiction is a complex disorder characterized by compulsive and often uncontrollable drug craving.

Causes :

1. Cannable Compounds :
The main active agent in cannable compounds, delta - 9 - tetrahydrocannabinol (THC), affects the neurotransmitter communication process.

2. Opioids
These drugs affect the nerve cells of the reward pathways in your brain in ways similar to that of stimulants, producing positive reinforcement for the use of these drugs. There are opioids receptors in the brain, spinal cord and gastrointestinal tract.

3. Central nervous system stimulants :
These drugs raise the levels of dopamine, norepinephrine and serotonin in the synapses. Brain cells release dopamine as part of the reward system through whcih you learn to seek stimuli, such as food and sex.

Risk Factors

1. Personality , if you're a thrill seeker, impulsive and resistant to social norms, you run a grater risk of drug abuse and dependence.

2. Anxiety, depression and loneliness :
   Using drugs can become a way of coping with these painful psycholgical feelings.

3. Social environment :
   Particularly for young people , peer pressure is a strong factor in starting to use and abuse drugs. A lack of attachment with your parents may increase the risk of addiction.

4. Genetics :
   Drug addiction is more common in some families and likely involves the effects of many genes. If you have family membes with alcohol or drug problems, you're at greater risk of developing a drug addiction.

5. Type of Drug :
   Some drugs, such as heroin and cocaine, more quickly result in physical addiction than do others.

Clinical Featuers :

Family : Behavioral changes may cause marital or family sterile

Work : Work performance may decline, and you may be absent from work more often.

Social : You may lose or alienate longtime friends

CHAPTER - XV
MENOPAUSAL SYNDROME

Menopausal Syndrome means cessatio of menstruation. A woman is usually considered to be menopausal if she has not had a menstrual period for 6 months and there is no other under lying cause.

Menopausal Syndrome includes symptoms associated with the normal changes that take place in a womans body as her period of fertility ends. It affects most commonly the women with age group between 45 to 55.

Menopause is a normal consequence of the ageing process. Ovaries gradually become less active and produce smaller amounts of estrogen and progesterone. More than 8 in 10 women experience mild problems or none at all, but some women have severe symptoms.

The symptoms are :

- Hot flushes, head, chest, and arms become red and feel hot, lasting from a couple of minutes to as long as an hour.
- Heavy Sweating
- Feelings of anxiety, panic, or depression
- Drying and wrinkling of the skin
- Vaginal dryness and discomfort
- Urinary stress incontinence
- Crystitis like symptoms
- Insomnia
- Irritability
- Memory loss

The related signs are :

- Vaginal atrophy
- Osteoporosis

The Tests Conducted are :

* FSH Levels
- Estradiol Levels
- LH Levels
- Endometrial biopsy

Generally followed measures are :

- Hormone replacement therapy (HRT) in the form of pills, implants under the skin and skin patches.
- Estrogen creams
- Combination therapy
- Calcium tablets
- Symptomatic treatment

Follow up is especially recommended for people on HRT

- Regular check up on BP
- Regular clinical breast examination
- Regular mammograms
- Endometrial biopsy in case of abnormal bleeding

One needs to follow a regualr weight bearing exercise regime and regular breast self examination, especially, patients on HRT.

CHAPTER - XVI
PSYCHOSIS

Psychosis is a mental disorder in which a person's mental capacity, emotional responsibility, ability to communicate to others is impaired.

TYPES OF PSYCHOSIS

I. Organic psychosis
II. Functional psychosis:
   1. Schizophrenia.
   2. Schizophrenifrom psychosis.
   3. Brief reactive psychosis.
   4. Schizo-affective psychosis.
   5. Paranoid states.

ORGANIC PSYCHOSIS

It is associated with impairment of brain tissue function.

Causes

1. Drug intoxication : Anticholinergic, anticonvulsant etc.
2. Metabolic disorders: uremia, cardiac failure etc.
3. Intracranial infections: Meningitis, encephalitis
4. Head injury.
5. Epilepsy.

Clinical features

1. Impairment of orientation to time, place and person.
2. Impairment of memory.
3. Impairment of intellectual functions e.g. calculation, comprehension etc.
4. Anxiety.
5. Depression.
6. Impairment of consciousness.

MANAGEMENT

1. Maintenance of nutritional and electrolyte balance.
2. Sedatives and hypnotics e.g. chloral hydrate.

FUNCTIONAL PSYCHOSIS

This is group of mental illnesses where the symptoms of psychosis are present. The functional psychosis differs from organic psychosis by the absence of disturbances of memory, intelligence, orientation, consciousness.

I. Schizophrenia

It is premature deterioration of mental faculties.

Etiology :

1. Age: 20-40 years.
2. Sex: both male and females are equally affected.
3. Genetic factors.
4. Environment factors: patients with the disease are more likely to have mothers with the history of problems in pregnancy e.g. pre-eclampsia, birth asphyxia, low birth weight etc.
5. Neurochemistry: dopaminergic overactivity may lead to schizophrenia.

Clinical features

1. Disturbances of thinking: delusions of various types are common.
2. Disturbances of verbal behaviour: mutism, neologisms etc.
3. Disturbances of motor behaviour.
4. Disturbances of emotions.

Management

1. Drug therapy: Phenothiazines, dibenzodiazepines.
2. Electroconvulsive therapy.
3. Modifying the environment.

II. SCHIZOPHRENIFROM PSYCHOSIS

This resembles schizophrenia. The difference is only in the duration of the illness. Schizophrenia symptoms will be for atleast 6 months while the schizophreniform symptoms will be for more than 2 weeks but less than 6 months.

III. BRIEF REACTIVE PSYCHOSIS

This disorder occurs due to psychosocial stresses. It has symptoms such as delirium, hallucinations, incoherence and disorganized behaviour.

IV. SCHIZO-AFFECTIVE DISORDER

It is characterized by presence of schizophrenic symptoms along with mood disorder, either depression or elation.

V. DELUSIONAL DISORDERS

It is characterized by presence of non-bizarre delusions which involve situations that could occur in reality such as being followed, deceived by spouse etc.

A TEXT BOOK

OF

PSYCHOLOGY

AND

ABNORMAL PSYCHOLOGY

INDEX