Chapter - 1

Introduction
INTRODUCTION

A great variety of meanings and interpretations have been attached to the term intuition from being considered as merely an unreliable common sense source of knowledge, to an interpretation suggesting that intuition is the Primary source of all true knowledge (e.g. Descarte, Spinoza and Bergson).

Intuition has a long tradition of use in philosophy, mathematics, business, psychology, engineering, linguistics, music, literature, religion and science – Particularly with reference to the creative process. Some of the many definition and understandings of intuition are mutually inconsistent. Still the basic definition is simple. According to the Random House dictionary of the English language (second edition): intuition is “direct perception of truth, fact, etc. independent of any reasoning process, immediate apprehension.” Another definition from the same dictionary refers to intuition as “a keen and quick insight” other definitions stress that the intuitive process is itself unconscious. Intuition, then is “knowing without knowing how you know”.

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Naturally, attempts have been made to reduce process to something less mysterious. Norman Simon, the Nobel laureate economist and cognitive scientist, had suggested that intuition is nothing more than the brain’s capacity for subliminal computation.

Some Social Scientists view intuition as nothing more than learned habits and social conditioning.

According to Iqbal it is a basic psychological function which transmits perception in an unconscious way. Intuition has this peculiar quality. It is neither sensation, nor feeling, nor intellectual conclusion, although it may appear in any of these forms. Through intuition anyone content is presented as a complete whole without our being able to explain or discover in what way this content has been arrived at intuition is a kind of instinctive apprehension irrespective of the nature of its contents. Like sensation. It is an irrational perceptive function, its content like those of sensation have the character of being given, in contrast to the derived or deduced character of feeling and thinking contents.

According to Gary Klein a research psychologist intuition is an eventual, powerful and practical tool for decision making and not a special gift of perception or magic. Defining
intuition as the way we translate our experience into action, he shows how any one can build intuitive decision-making skills through a programme of mental conditioning. Klein lays out his theory that intuition is something to be valued, developed, and leveraged.

According to Albert Einstein, the intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift.

DD Runes defines intuition as, “The direct and immediate apprehension by a knowing subject of itself, of its conscious states of other minds, of an external world, of universe, of values or of rational, of values or of rational truths”. It gives an adequate knowledge of the essence of things. It enables us to know reality. Intuition is the special faculty which transcends the conditions of existence. It is not conditioned by the categories of understanding. The plane of mind immediately above that of reason is known as intuition.

Bruner has defined intuition as:

The intellectual technique of arriving at plausible but tentative formulations without going through the analytical
steps by which such formulations would be found to be valid or invalid conclusions (Bruner, 1960).

Zoa Rockenstein (1988) considers the prevalent view that either one has the intuition or does not have it, as wrong. Intuitive ability need not be viewed as something which is rare. It is found in a lesser or greater measure in all, and like creativity can be developed.

Intuitive Wisdom is born of experience,” says David Myer’s Ph.D, a Professor of Psychology at Hope College in Holland, Michigan, and author of intuition. Its power and Perils often represents learned expertise that’s instantly accessible. For example, a chess master can look at a board and intuitively know the right move. But most of this knowledge is not articulated or directly taught.

Of course, not all hunches can be explained by experience. The mother who senses when her child is in danger or the decision one makes to take a different route home that ends up avoiding a huge traffic jam, for instance. Some researchers slide such incidents into the category of coincidence, while others shrug them off as inexplicable. George Santayana refers to intuition as to our awareness of the immediate data yet Hocking has spoken of self-
knowledge as the best case of intuition. Intuition and intelligence should not be confused as same because intelligence is a scientific tool to deal with the matter whereas intuition can lead one to the very inwardness of life.

According to Sodhi et al., one view is that intuition is an immediate way of knowing, it is sudden flash of light or immediate sensation whereas another type of intuition is of more generalized nature and usually thought to be mark of genius who have the knack or intuition which enables them to see the intuition in a way that is new and different types of hypothesis and theories are created. Thus at the most practical or somewhat mechanical level, intuition is often termed as a skill that one can develop much as one can develop or improve musical or artistic skills by practice under the supervision of an expert. Intuition is not only a skill rather it is a trait where nature and not the nurture plays the predominant role in the ability to exhibit the phenomenon. That way intuition is an inherent trait more available to certain types, or available under certain conditions, rather than a technique available on all, to all who practise a certain form of mental training. In fine
intuition involves a cognitive process and a possible source of knowledge like experience and reason is nor infallible.

Sri Aurobindo regards, “Intuition as an extension of that form of knowledge by identity which gives us the awareness of our own existence.”

H.P. Blavatsky says everyone of us posses the faculty, the interior sense, that is known by the name of intuition, but how rare are those who know how to develop it! It is however only by the aid of this faculty that men can ever see things in their true colours. It is an instinct of the soul, which grows in us in proportion to the employment we give it and which keeps us to perceive and understand the realities of things with far more certainty then can the simple use of our senses and exercise of our reason. What are called good sense and logic enable us to see only the appearances of things, that which is evident to everyone.

Mathematicians and scientists use the term intuition, generally in two different ways:-

(a) Either as similar to the moment of illumination in a problem solving process (the first global grasp of a possible solution)
(b) When referring to a statement which may be accepted as being self evident for instance, The whole is bigger than each of its parts.”

Science and journals are filled with outstanding stories of the amazing power we have to solve complex problems in our sleep. It seems that when our conscious mind or the analytical mind, gets out of the way, the subconscious mind is capable of making dramatic leaps in learning and unexplainable discoveries that depend on information that is not available to us at conscious level.

Psychology is trying to confer on the term intuition or intuitive knowledge a scientific status. For Piaget “intuition” simply means non formal thinking (C Beth and Piaget 1961 pp.223-41). However with advances in knowledge, more attention is being paid to this relatively neglected aspect of human potential. Chomsky has emphasized the role of intuition in the language development of children.

The representatives of Gestalt Psychology have used the term Einischt (insight) in a way which is very similar to that of intuition (in the sense of a sudden appearance of solution to a problem) Hartman 1966.
According to Sri Aurobindo, Intuition brings to man those brilliant messages from the unknown which are the beginning of his higher knowledge. Intuition gives us the idea of something behind and beyond all that we know and seem to be which pursues man always in contradiction of his lower reason and all his normal experience and impels him to formulate that formless perception in the more positive ideas of God, immorality, Heaven and the rest by which we strive to express it to the mind. Intuition transforms mind, heart, life, sense and even body. It brings radiant movement in to will, feelings and emotions.

Iqbal begins with intuition of the self and brings intuition nearer to the experience of all human beings. From intuition of the self, he would go further to the intuition of reality and from reality to absolute reality. Intuition of the self is open to us all. In some moments of important decision and action we have it. This intuition takes us to the very root of our existence and assures us directly of our own reality. According to Iqbal, intuition leads one to the affirmation of the reality of the self, its freedom and its immortality.
Intuition is a knowledge that comes to a person without any conscious remembering or formal reasoning. Some people incorrectly call intuition the sixth sense critics of this idea suggest that intuition is rapid inference (reasoning from known facts) investigation usually shows that intuitions are based on experience, particularly, the experience of individuals with great sensitivity. A person’s experience is a store house of memories and impressions. These bits of experience with proper stimulation shape into a thought or judgement. Then the person knows something but cannot say where the knowledge came from. People call this kind of sudden impression an intuition or hunch.

Intuitions are sometimes followed in detective work, card games and military planning. They often occur in scientific work and in the treatment of diseases. Women are sometimes said to be more intuitive than men, but there is no scientific evidence for this claim. Philosophers such as Immanuel kant, for example maintain that it is through intuition that we construct and maintain the basic elements of our world – our sense of space and time, our sense of identity, our sense of the truth of things, our sense of beauty and goodness. Intuition derived from the very
structure or essence of our minds, is viewed in philosophy as being prior to all perception and all reasoning. In linguistics, intuition is understood as the process by which listeners recognized the meaning of words and sentences, and speakers from words and sentences to create meaning.

Virtually every profession distinguishes between the highly intuitive sense of the virtuoso or genius as opposed to the competent, workmen like performance of other professionals. In many diverse fields of endeavour – including music, dance, drama, comedy, athletics, gambling, psychotherapy, financial management and marketing – the factor that seems to distinguish great intuitive genius is that of timing. It is as if, at this level, one’s whole being is fully engaged in the apprehension of the nuances and rhythms of the relevant activities, both internal and external. Intuition is an exquisite sensitivity within one’s deepest being, to the pulses of life’s energies.

Mathematical intuition is an interesting case. The realm of pure numbers and geometrical forms is platonic in nature – It does not exist in the natural world and cannot be directly observed. Yet, one significant aspect of mathematical intuition is the ability to apprehend, and even
visualize, this realm. Cases are on record of mathematicians who have developed the capacity to accurately visualize the details of geometrical forms in four dimensions of space. Interestingly, however, these visualizations are subject to verification not through empirical methods – but through the logic proofs of mathematics and geometry.

Among the contemporary philosophers Bergson, Whitehead, Hocking and Marcel have particularly emphasised intuition as a valid and valuable instrument of knowledge. With Bergson’s intuition is man’s aboriginal and persistent awareness of the universe, answering problems that intellect raises but cannot answer. It is the immediate experience which underlies the processes and purposes of life and cosmos, stripping off the “veils” of verbalization, conceptualisation and symbolism. With Whitehead intuition is the reaction of man’s nature to the general aspect of life in the universe and is the most significant guide in ultimate matters beyond the passing flux of immediate thing. Marcel regards intuition as the sole source of explanation of mystery in the structure of the universe where the whole self – its feelings, body and will, and not the Cartesian mere thinking self, becomes the subject of its own awareness.
Intuition alone can make the mind complete and living – it is an act of participation in the other or God which he identifies with existence.

With Hocking intuition as an instrument of knowledge is not averse to conceptual interpretation. He observes “intuition” as persistent awareness of, and reaction to, the real is our most directly empirical relation to the world, the most universal, the most unrelenting.

In China intuition stands for man’s original mind through which he immediately knows that right is right and wrong is wrong. Since everyman possesses intuitive knowledge “the streets are full of sages”. Neo-Confucian philosophy seeks to extend all intuitive knowledge in to practice. Wang Shou-Jen observes, “themselves earth and all things all lie, within the function and activity of our intuitive knowledge.

A man in whom intuition is dominant easily finds his efficient, transcending whole self. His creative personality and its productive values and experiences all become oriented around intuition. Gardner Murphy aptly observes. A psychology of perception which neglects this intuitive matrix is a psychology of surfaces, not of solids, and a psychology
of personality which consider only conscious aspect of perceptual wholes is no better.

In the mind of the average psychological reader the concept of intuition is encrusted with connotations of mystery and obscurantism, and is therefore suspiciously viewed. It is, however, the only concept that contrasts properly with inference, and that can be applied to a wide variety of related theories, all of which hold knowledge to be, in one way or another, immediate and direct. Although there are several varieties of intuitions, all of them agree that knowledge of people is not derived solely from inference and analogy.

J.G. Muller (1942) tells an interesting anecdote with high-lights the advantages of intuition over analysis. A young Lawyer was advised always to make his decision in terms of his own best judgement and analytically in terms of his knowledge of principle of law. He followed this advise and became very successful as a judge, handing down decisions which were famous all over the legal world. Eventually he became so impressed with his success that he thought he ought to try to give the reasons for some of his decisions for the benefit of future generations of jurists.
However, when he did, in fact, write out the bases for his decisions, their absurdity was obvious to everyone and he only appeared ridiculous in the eyes of the whole legal profession. Similarly the theoretical psychologist, with his tools of analysis and inference, must often appear ridiculous in the eyes of really good clinical judges of personality who are not forced to give the reasons for their judgements.

Intuition began gaining legitimacy among scientist back in 1995, when DEAN Radin, Ph.D. then director of the Consciousness Research Division of the Harry Reid Centre for Environmental Studies at the University of Nevada-Las Vegas, first started studying it. Radin hooked up subjects to electrodes to monitor skin resistance — one of the methods used in lie detector tests to major emotional changes. Then he left them in a room alone to watch various images — some designed to provoke forceful emotions (like a car crash or mutilated bodies) and other calm emotions (like beautiful national scenes) — Flash in random order on a computer screen, “one in 10 study subjects showed a significant increase in arousal two seconds before the disturbing images appeared”, Radin says, “and a drop in arousal before the call images”. These folks didn’t
consciously know a gruesome scene was about to pop up, but their bodies sensed it and responded subconsciously through their nervous system.

Later Radin refined the test to measure other nervous system responses, including skin temperature, respiration rate, and fingertip blood volume. His tests using these indicators have affirmed his earlier results.

Intuition seems to turn up out of nowhere, but that doesn’t mean it’s magically plucked from the sky. In fact, most experts agree that it is a product of life lessons, and that much of it is tucked beyond our consciousness.

**Classification of Intuitions**

The domain of intuitions is so vast and so apparently heterogeneous, that no serious analysis of its implications is possible without a preliminary classification. A first dichotomy distinguishes problem solving intuitions and affirmatory intuitions.

**Problem Solving Intuitions**

There are two main types of problem solving intuitions (a) Anticipatory intuition represent the preliminary global views, which precede the analytical fully developed solution of a problem.
After an intense effort for solving a problem, it is possible to get suddenly the feeling that the solution has been reached, though not yet in all of its details. This anticipators solutions inspite of the fact that it has not yet been expletively proven my appear as complete and certain.

According to Bruner the intuitive thinking of pupils (Plausible, intelligent guesses) has to be encouraged in an instructional process (Bruner 1965) and not banished as is frequently the case.

**Affirmatory Intuition**

Affirmatory intuitions are cognitions (representatives, interpretation, relations), which are directly accepted as certain and self evident by the knowing person.

They always contain as element of belief, which generally transcends the effective data at hand. Some of their cognitive beliefs may be considered as being correct by the scientific community during a certain period. Some of them may be qualified as false and consequently they have to be rejected or connected via instruction.

Affirmatory intuitions (cognitive beliefs) represents them very active intellectual factors of which people are not
very often aware. The instructional process must not ignore them. They may block or facilitate the comprehension of concepts and statements. What characterises them is their apparent obviousness, the feeling of immanent necessity, their extrapolativeness, and their resistance to instructional influences. They may be enriched, refined, corrected and become conceptually controlled only as the effect of personal involvement of the learner in a long-lasting activity. An activity which requires and consequently shapes, such new intuitive views.

Another important series of tests was carried out by J.G. Vanbusschbach in Holland and later in the United States (1953). In these experiments the subjects were fifth and sixth grade school children, their teachers serving as agents or experimenters. Results under these conditions were highly significant. Classroom experiments of this order were repeated by Margaret Anderson and Rheawhite (1956) working under clairvoyant conditions, they found that scores obtained by pupils “liking” their respective teachers were significantly higher than those obtained from pupils expressing negative attitudes towards them. In turn, the teachers positive attitude towards his pupil had a favourable
effect upon ESP scores. Yet replication of results by other working was only partly successful.

Intuition is just one attribute of the creative mind. Our thinking and decision making are also initiated and sustained by education, experience, imagination, innate wisdom ethical-percepts, motivation, self actualisation, values, courage etc.

Myers and Brigg’s discussing the 16 Personality types based on Jung’s introvert and extrovert typology differentiates between sensation and intuition e.g. in terms of information processing. If it is in the form of facts or familiar types it is called sensing, if it is in the form of possibilities or new potential it is called intuition. In other words when information is taking in primarily by way of the senses it is termed as sensing. When information is perceived primarily in an intuitive fashion the term intuition is used.

Sensing tends to be interested in tangible reality, focussing on the present, and seeing what is, rather than what might be. At an extreme, sensing can have its fact so well and truly on the ground that it misses out on possibilities for the future.
The preferences for intuition gives a greater emphasis on insight and the future, focusing on what might be, rather than what is. At an extreme, intuition can focus so much on possibilities that it loses touch with current realities. Sensing tends to communicate in direct ways, whilst intuition prefers to communicate in creative ways.

Intuition is defined by Jung as “the immediate awareness of relationship” and regarded by him as a basic psychological function along with three others viz sensation, thinking and feeling. Thinking and feeling are rational, sensation and intuition are non-rational. Intuition is a non-rational psychological function opening the door to an aspect of human experience which eludes consciousness. It largely depends upon complex, unconscious operations says Jung. There are the implications and overtones of experience which cannot be known in any other way. Intuition in Jung’s writings presents us with complete and finished contents though it is not clear as how these came into being.

In addition to the conscious-unconscious polarity and the extraversion-introversion polarity, Jung postulate four functions of the psyche thinking, feeling, sensation and
intuition. For Jung thinking and feeling are polar, or opposite to each other and so are sensation and intuition.

Intuition provides us with startling inspirations, revelations and insights regarding what is not readily observable but is nevertheless true. It is the intuitive function which enables us to make the mental jump from the known, present facts to the unknown still unseen possibilities of what can happen if intuition accounts for our prophetic abilities our hunches and those accurate first impressions we sometimes get about things and people as contrasted with the practical, sensing personality who is able to read the data of the external world the intuitive personality gets its information primarily from his inner unconscious responses.

A person who is highly intuitive may be the true visionary, but if he is greatly under developed in the function of sensing he may not know what to do with his intuitional understandings. If he lacks sensitivity in the realm of practical affairs, his intuitive knowledge will not help him pragmatically to get to where he wants to go and do what he wants to do. Such persons are other characterized as dreams or impractical visionaries.
The illogical and non-rational mental functions are intuition and sensation. The logical and rational functions are feeling and thinking. All four are necessary for man’s mind to perform if he is to know and live in this world.

When a student makes a decision and is unable to give reasons for it, he is often said to have acted intuitively. Intuition goes beyond the senses of sight, hearing and so on, to lower levels of consciousness thinking is not a part of intuition. We come upon our decision without any conscious activity of which we are aware obviously, subliminal clues are used, but because they are subliminal we cannot reconstruct our thought processes.

Jung felt that intuition is as important to man’s mental life as is any of the other three functions. Only by intuition man is able to solve some of his problems sensing, feeling and thinking may bring him no nearer to a solution, because the facts do not lead themselves to the five senses, to a personal commitment of emotion or to the orderly argument of facts. He then may be able to drive profitably at some sort of conclusion by, intuition, which employs none of these mental functions. But intuition, like sensation, knows no rules of logic. The answers came from the inner recesses
of the unconscious through patterns and processes that cannot be traced.

According to Jung, the conscious aspects of men are usually thinking and sensation where as feeling and intuition are repressed. In women, feeling and intuition are dominant, with thinking and sensation repressed.

EXTRA-SENSORY POWER OR PRECOGNITION

Common to every one are dreams, among our most convincing experiences. Because the nature of dreams is still surprisingly ill understood, Cultphud literature is filled with accounts of what claim to be precognition, seeing the future.

A mother dreams her three-year-old son has drowned in the swimming pool, she finds him floating face down. She wakes up but forgets, the dream. While washing dishes at the sink, she suddenly remembers, it rushes out, finds her youngster face down in the pool, but saves him.

The subject matter of parapsychology stems from frequently reported experiences which seem to defy an easy explanation. A man may dream of an impending catastrophe before it happens. A woman may experience anxiety about
her husband at the moment his car is involved in a collision. A psychic healer may be involved in the remarkable recovery of a person from fatal disease.

All parapsychological phenomenon are referred to as psychic occurrences or Psi. Psi has both perceptual cognitive and motor kinetic aspects. The perceptual cognitive aspect of Psi is designated as extra sensory perception or ESP and includes precognition (the ability to foretell future events), Telepathy (mind to mind communication), and clairvoyance (the knowledge of distant happenings). The motor kinetic aspect of psi is designated as psycho kinesis or PK, the ability to influence the movements of objects. Without the intermediation of any known energy. (e.g. Psychic healing, thought photography, control of dice from a dice, influence over the growth of plants by paranormal methods).

Most of the experimental data in parapsychological literature have proceeded in direction unlike there advocated by humanistic psychologists e.g. the pioneering work of J.B. Rhine (1935) involved the development of materials and methods that would permit easy handling and precise measurement. He used a specifically designed pack of cards containing five cards on which there was a cross,
five on which there was a circle, five which contained a square, five which contained a star, and five on which there were wavy lines. A series of 25 trials with the Esp cards was called as run, a successful trial was called a hit. Five hits per run is the expected average.

Later, Rhine (Pratt, Rhine, Smith and Stunt 1940) conducted similar card tests demonstrating to his satisfaction, the independent existence of various types of Esp. clairvoyance, telepathy and precognition. He then attempted an investigation of PK though various tests with dice.

The attitude of Rhine’s professional colleagues, and of intelligent persons generally in the middle decades of the 20th century, was one of disinterest or actual disbelief in psychic manifestations. Authentic instances of clairvoyance, mental telepathy, provision or precognition, retro cognition, and related psychic phenomena, had nevertheless accumulated.

A mid western banker had read Death comes to the Archbishop. The image of his dying father, 5000 miles away, crossed his mind and two days later word arrived that his
father had died within fifteen minutes of the time, of his vision.

A college professor’s wife was engrossed in a bridge game. Something inspired her suddenly to call her baby-sitter on the telephone. The baby-sitter reported the baby safe but discovered later that even as she was speaking the child was hanging head downwards from her carriage.

Two schoolmates dreamed of each other on the same night after having been out of touch with each other for forty years.

During sleep a woman received the image of her brother committing suicide. She roused her husband and they drove nine miles in a borrowed buggy to the brother’s house. The brother had committed suicide. With photographic exactness the dream had duplicated every detail of the actual incident.

A woman awakened her husband one night and told him of a horrifying dream. She reported seeing a large ornamental chandelier which hangs over her baby’s bed. The chandelier fell and crushed the baby to death. The hands on the clock in the baby’s room pointed to 4:35. Her husband laughed at the story and criticised her for putting
the baby in her own bed. He did not laugh two hours later when a crushing noise summoned then to the baby’s bed chamber. The chandelier has fallen on the baby’s empty crib, the clock on the dresser showed the time to be 4:35. In this instance, human violation may have effective in altering the shape of forth coming events.

In one case a person had an intuition that a friend was dead. This turned out to be true. The person concerned thought his intuition was due to telepathic communication. It was, however found that an obituary notice had appeared in the news paper in a column adjacent to a news item which this person had been reading. It is mere reasonable to assume that he perceived and read the obituary notice unconsciously than that he had received a spirit communication.

Yugma Malik a sixth class student from the school of father Angel School Sector -62, Noida.

One night she had a terrifying dream. She dreamt that she lived on a hill station, where many other people also lived. They all were living in harmony, when one-day a flood Came washed away all the houses and trees. The water was very cold. Children and people drowned. There was a
sudden panic on the hill, which was a haven for the people living in that hill station. She was crying for help but nobody came. This part of the dream was so shocking that she just got up for the bed sweating and crying. She just ran to her mother and told about the nightmare. But exactly after three days when she got up in the morning and switched on the T.V. it looked like every channel was transmitting her nightmare. Tsunami had recollect her dream she think was it some kind of warning of God or just a co-incidence. (The Hindu) (Young World, Friday, 8 April, 2005).

**SIGNIFICANCE OF STUDY**

The empirical study of intuition is quiet recent in the field of education and psychology as intuition has been seen from different perspectives e.g. Vaughan’s types of intuition (1979) and Goldberg’s intuition in terms of functions (1989).

To the present researcher however, the doubt arises in the mind whether intuition is a form of higher mental ability or is it a complete separate phenomena. Because if we consider intuition in terms of “insight” or functioning at the sub conscious level then it might mean that some background knowledge or some background thinking is at
the base. Then in this case intuition should be related to higher mental ability. If we take intuition as something which defies cognitive processes and take it as a separate faculty e.g. (in case of mystic awareness or the knowledge of a Sufi). In order to solve this controvers the present research is a humble attempt to understand the phenomena of intuition as Einestinein said “intuition is what is important.”

OBJECTIVES OF THE STUDY

The objectives of the present study are given below:-

1. To study the relationship between intuition and higher mental ability.
2. To study the relationship between intuition and creative problem solving.
3. To study the relationship between higher mental ability and creative problem solving.
4. To search the factors involved in intuition, higher mental ability and creative problem solving.

HYPOTHESIS

To every problem, there may be more than one solution. A researcher’s effort is also directed towards a
solution of the selected academic problem. Most of the time it is possible to make intelligent guesses about the solution of the problem. Such an intelligent guess of a tentative solution is known as "hypothesis". As for that matter, the investigator formulated the following hypotheses.

In order to study the objectives the following hypothesis were formulated in the form of null-hypothesis.

1. There is no relationship between intuition and higher mental ability.

2. There is no relationship between intuition and creative problem solving.

3. There is no relationship between higher mental ability and creative problem solving.

For the objectives from one to three we employed product moment correlation. In order to test the first, second and third hypothesis product moment correlation was found between the three variables.

In order to study the fourth objective we used rotated varimax technique of factor analysis.