CHAPTER II

REVIEW OF LITERATURE.

A. The concept of creativity, its theories and measurement

The concept of creativity was considered vague and elusive for it was often confused with intelligence and even with madness. When Galton drew attention to creativity it led to a great deal of studies being done on it resulting in a clearer picture of it emerging.

Spearman (1930) enunciated three qualitative and five quantitative principles underlying the creative mind. He stated that (1) a person tends to know his own sensations, feelings and strivings (2) when two or more percepts are given, the individual perceives them in various ways as related, as near, after, cause or part of the other (3) on the principle of correlates, when any item and a relation to it are present to the mind then the mind can generate in itself another item so related. These three qualitative laws with five quantitative ones together produce three processes (1) reproduction (2) disappearance and (3) variation. These supplement one another and complete a system which he calls "neoyogenesis". Spearman felt that psychologically creativity is "the displacing of a relation from the ideas which were its original fundaments to another idea and thereby generating the further
idea which is correlative to the last named, and which may be entirely novel".*

Downey believes that "creative intelligence is not a special prerogative of the poet or novelist or artist. All adults can cite instances of lucky guesses, sudden insights, unexpected generalisation.** Whatever be the nature of creativity, it is a fact that thinking itself is a very remarkable human achievement and that a creative thinker is greatly valued. The question arises then what is it that individuals do when thinking creatively? Is a creative thinker a special kind of person? Or is he a product of some privilege? development?

**Creative thinking**

Thinking is personal, dynamic, intense and varies from individual to individual. Vinacke and others have pointed out that actual thinking moves between two poles the realistic which is logical and scientific and the imaginative which allows inner currents to play freely, fantasize, image and hypothesise. Creative thinking results from the interplay of one's life experiences with what is gained by reading, thinking and training. When they merge, original thought


results. Creative talents some regard as part of intelligence when intelligence is viewed broadly. Creative thinking is affected by many factors and many people indulge in genuine creativity now and again. A woman designing a dress is as creative as a man designing a machine. The difference lies in degree and the greater output of good work by the creative person.

Ghiselin and other creative thinkers discussed what happens when one creates. Peter Mckellar, Stephen Spender, Henri Poincare and others point to the conditions in which creativity occurs. Spender finds poetry writing the disciplined application of techniques and skills to specific problem solving, requiring hard work and inspiration. Poincare found in creative mathematics both the conscious and the unconscious active. While some creative thinkers are systematic, orderly and thorough others are impulsive.

Conditions of creativity:

Creative thinking involves preparation where one collects, selects and analyses data. During incubation these data sort themselves out below the level of the conscious. Illumination occurs suddenly when the solution is found. Creative thinkers are influenced by a wide range of skills, habits, capacities and knowledge. Yet, some creative thinkers depend on specific stimulus and sensory cues, smells, sights
and physical conditions to stimulate creativity. Dreams, hypnagogic imagery, visual, auditory and kinaesthetic visions, hallucinations, eidetic imagery, remembered ideas and previous experience add to one's creativity.

Motivation is another factor affecting creativity like practical imagination. Creative products result from intelligence and skill and are useful. Osborn found creativity largely a matter of effort. Frank Leaverty (1974) believes that as an individual goes up in the organizational hierarchy his routine responsibilities decrease and his problem-solving and innovative responsibilities increase proportionately. Creativity being a multidimensional process of interaction with the environment it can be stimulated. Lowenfeld suggests that the best way to nourish creative instinct is to provide the means of self-expression.

Research in creativity has not yet made it clear whether creativity is an ability different and distinct from intelligence or it involves several primary mental abilities as stated by Thurstone (1952), Guilford (1957), Breydel and Cattell (1958), Hutcher (1957). This has resulted in the loose use of the term such as original, creative, imaginative, non-conformist, gifted, talented, genius etc. Though there is no conceptual consistence as to what creativity is, Galman regards it as a normally disturbed trait, an aptitude, an intrapsychic process and even considers it as a life style. It is found more in children
then in adults and some regard creative persons to belong to
the top 1 to 2% in 1.4.

Types of Creativity:

while these views both contradictory and complimentary
exist it is also found that there are different varieties and
degrees of creativity. To the semantic field belongs verbal
creativity found in scientists, philosophers and writers. The
pictorial artist has visual and figural creativity. The
musician, composer and performer are figural and auditory
creatives. Mathematicians possess symbolic creativity.

Taylor (1972) identified five types of creativity each
with its own psychological process (1) Expressive creativity
where originality and quality of the product is unimportant.
(2) Technical or productive creativity which is concerned with
skill rather than novelty. (3) Inventive creativity where there
is ingenuity and production of a novel and appropriate product.
(4) Innovative creativity which brings further development to
an established body of meaning and (5) Emergentive creativity
which is the final and most complex form of creativity, which
is individualistic and generates insights.

Historical Perspective:

The study of creativity gained significance when Galton
published his 'Hereditary genius' in 1869. His empirical study
placed men of genius at the extreme top of a continuous distribution. Early in the twentieth century Charles Spearman in London and Alfred Binet in Paris pioneered the measurement of abilities. Galton regarded abilities in terms of varied talents and motivation. Spearman emphasised intelligence in all types of achievement. Both regarded heredity as the source of greatness. Terman's work with Leta Hollingworth (1925) on adjustment difficulties of children with high I.Q. led to much controversy and experimentation resulting in changes in educational schemes. Burt (1925), Hargreaves (1927) and others experimented with imagination and originality. Other talents also came in for study during the 1920's and 1930's. Patrick (1935, 37, 30 and 41) was the first to study creativity experimentally and he identified the four stages of its development as preparation, incubation, illumination and elaboration.

Guilford (1957) viewed creativity as a collection of component abilities and other traits which was supported by Cattell and Eysenck (1958), Burt (1962). Thurstone's multiple factor theory and Guilford's model of the intellect unleashed a flood of work on creativity tests in 1950's and 1960's. Burt (1962) critically appraised the strength and weaknesses of Betz and Jackson's study. Amoresa (1962) found the manner in which we often rear creative geniuses different from what is prescribed for creative development. Wallach and Kogan (1965) paid greater attention to the condition
of administration and to statistical consistency of divergent thinking tests. Hudson (1966) attacked the illogicalities of the creative boom when he found through his investigations that there is convergent thinking associated with the commitment of a science student and divergent thinking where one preferred literary studies. Shapiro (1968) obtained promising correlations between a well constructed battery and the creativeness of a group of adult research scientists. He dealt with the problem of setting up suitable criteria against which the tests of creativity can be validated.

A review of the last three decades of research in creativity shows one of the biggest reservations is its uncertain relationship to achievement in the real world (Torrance, 1980). It is clear that creativity is the cause of important breakthroughs in science and arts, in business and government and in all other fields (MacKinnon, 1961; Calvin Taylor, 1971; Torrance, 1972 and 1974). During these years a large number of test and non-test procedures have been devised and used to identify creative talent. Even biographical inventories have been used for this purpose by Khatana (1970), Torrance (1974), Taylor and his associates.

Simpson (1932), Gatzela and Jackson (1962), Wallach and Kogan (1965), Torrance (1967) have tried to differentiate
between creativity and intelligence. There has been found no relationship between figural creativity and measure of intelligence and low positive relationship between verbal measure of creativity and intelligence. The relationship of intelligence to creativity is highest among those of low average intelligence and lowest among those high in intelligence.

The view that creativity is heritable existed long ago and is also supported by several studies like those of Pezullos. Thoran Madana (1972) however found no hereditary variation in performance in verbal and figural forms of Torrance's test of creative thinking.

Torrance (1971) summarized the results of 15 different studies conducted in various localities and found that on the overall there were no racial or socio-economic bias. Taylor, Ellison et al., (1960), Lunneborg (1971) have also contributed to this view.

Development of Creativity:

Shakespeare's seven stages of man were followed by Sigmund Freud's five stages of sexual libido opening up the field of developmental studies. Maslow, Piaget and Sullivan a hundred years later showed that there are different stages of development in a man's life and that these stages have characteristic features. Piaget identified the stages of cognitive
development, Erikson that of effective development, Kohlberg and Mayer the stages of moral growth and Simpson that of psycho-motor development.

Gowan attempted to combine Erikson’s effective stages with Piaget’s cognitive ones and added his own on creativity, psychedelia and illumination thus extending the five stages to eight. Gowan believed that creativity first developed at stage three when one gains control over the environment through the warmth and affection received from the parent of the opposite sex which helped in bridging the gap between the real world and the life of fantasy. In stage six the love of a person from the opposite sex enhances creativity. Love and creativity thus enters one’s life environmentally. Though creativity is found in the different stages there is marked emphasis at certain stages. During each stage when cycles of escalation occur it leads to creativity and the personal unfoldment of the individual. Gowan believes that there are three higher stages of creativity, psychedelia and illumination beyond those mentioned by Piaget. In these stages there is greater mind expansion than that found in the formal operations stage and is rare even among adults. Creativity is optimal at the psychedellic stage when intuitive creativity gives way to creative resources being deliberately used.
Creative abilities are thus just a part of the expanding function of the human mind and its functioning. Parnes represented the creative problem solving process as the flow from a mess to fact finding, to problem solving, to idea finding, to solution finding and then to finding its acceptance leading on to further new challenges. Life is thus constantly the meeting of new challenges and more problems.

Early cross-sectional studies of creative development show that there are periods of slump during the ages 5-6, 9-10, 12-15 which was found by longitudinal studies. These discontinuities were regarded as culture made rather than genetic. Studies done in 1960's indicated that planned curriculum in schools could avert sharp drops in creative functioning that occurs in the fourth grade (Torrance and Gupta, 1964). The teachability of creativity was a controversial issue. It is now believed that it can be taught and acquisition and application of these skills increases the chances for creativity to occur.

Several methods have been advocated to develop creativity. There is need for ample opportunities for self-expression through various activities even if the product is crude or imperfect. Imagination and self-expression of children should be valued and the teacher's attitude in dealing
with it is important. No rigid structure should hinder the free and flexible nature of the environment if creativity is to develop. Creative abilities can be developed through training (Parnes and Meadews, 1963; Torrance, 1964; Crutchfield and Covington, 1965; Buchanan and Lindgren, 1973).

Torrance and Torrance (1972) analysed 142 experimental studies involving school students and found creative functioning most successful where children were taught deliberate, disciplined procedure of creative problem-solving as done by Parnes and Usborn through creative problem-solving procedures, synectics procedure etc.

Various views of creativity:

Kopucci found 26 definitions of creativity. Rhodes (1961) and Kneller (1965) found creativity definable from four different aspects as product, person, process and press. Investigators vary in their definitions as they approach it from different perspectives. These definitions reveal creativity as an intra-psychic process evoking surprise, being novel and original. It is transcendent from the common and is influenced by socio-economic and cultural factors. It is found adaptable to the demands of a constantly changing environment and has great sustaining power.

View emphasizing product:

These definitions refer to that which is expressed in art, architecture in action, books and theories. Chisselin
emphasized novel combinations, unusual association of ideas having social and theoretical value. He measured creativity by the extent to which a product restructures our universe of understanding. Lacklen felt that the more the creative contributions the wider its effect (Israeli, 1946; Drevalch, 1955; Stern, 1963; Kavocka, 1964). Creativity is the individual's capacity to produce something new - a new form or rearrangement of old items. MacKinnon found creative products to be statistically rare acts, unique, novel and able to solve a problem, fit a situation or accomplish a recognized goal. Taylor regarded emergent creativity as the highest form of creativity.

View emphasizing person:

These refer to creativity in terms of physiology, temperament, attitude, habits and values of the person. Laswell considered creativity as the disposition to make and recognize a valuable innovation. Koubel (1963) felt creativity to be a generalized constellation of intellectual abilities, personality variables and problem-solving traits. The individual needs a high degree of ability for fluency, flexibility and originality, but it does not mean that the possessor is creative, it can only increase a person's chances of being creative. Simpson (1922) felt creativity is the power to break away from the usual sequence of thought. He wanted
research to identify the searching, combining, synthetic type of mind. Lowenfeld (1941), Borr (1945) and others considered art as the sublimation of life. Jung (1946) found both the conscious and unconscious at work in creativity. The importance of the unconscious was pointed out by Lowenfeld (1941), Krie (1952), Maslow (1959) and Zilboorg (1959). Maslow equated his "peak experiences" with self-actualization. Andrews (1961) defines it as a positive and self-integrating force, a process of self-actualization and the expression of being. Cross, Cattell and Butcher (1967), DiCicco (1968), Hudson (1968), Callister (1970), McHenry and Shoukamith (1970), Parmesh (1971) and many have regarded creativity from the point of view of the person.

Views that emphasize process:

These regard creativity as the action of the mind. Motivation, perception, thinking and learning come into play. Torrance regarded creativity as becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, harmonies and so forth. Creative thinking is the formulating, testing and communicating of ideas. Torrance's view also helps to define operationally the kinds of abilities, mental functioning and personality characteristics that inhibit the creative process. Amsel objected to it because it failed to distinguish between creativity as a highly particularized and
substantive capacity and as a generalised constellation of abilities. Anderson emphasised the search for truth. Spear-
man (1931) found new content created by transferring relations and generalising of new correlates. Ribot saw creativity as the capacity to think by analogy which is fundamental to creative thinking. Harman (1956) regarded the arrangement of old elements in new ways to solve problems as creativity and Mednick as the association of elements into new combinations to serve in a useful way. Rhodes combined all the four pro-
cesses and defined it as a naming phenomena by which a person communicates new concepts. Ghiselin (1952), Cropley (1965), Bowers (1967), Taft (1970), Dudek (1970), Field (1972) found creativity the outcome of confrontation with the outerworld. Taylor (1975) subsumed creativity as the innate capacity to transactualize.

Visually emphasising the press:

Creativity is regarded as the result of interaction between the person and his environment; Roll May saw it as the encounter of an intensely conscious human being with his environment. Sprecher found different opportunities are required for different work and stressed novelty and value. Carl Rogers found creativity as emerging from the uniqueness of the individual and the materials, events and circumstances of life and the people he interacts with. Stern regarded the
cultural aspect of creativity and what is novel and useful to a group of persons at some point of time. Thurstone and Stewart found creativity in sudden closure implying novelty, originality and surprise. To Bruner creativity is the result of combining and rearranging perspectives. O'Brien, Sibley and Sigan (1953) found that environmental manipulation resulted in new ideas, patterns and relationships. Bahn (1972) regarded environmental pressure important to creativity.

Rogers (1961), Mackinnon, Gough, Maslow and others emphasised interaction of the individual and his environment as important for creativity. An analysis of the various definitions helped the investigator to operationally define creativity as 'that ability enabling one to be useful, original and productive in day to day activities'.

Theories of Creativity:

The large number of studies undertaken during the last three decades has produced sound and diverse theories, definitions and tests of creativity. All these are being used, modified and refined with the passage of time. The results are integrated and ploughed into the school curriculum, teaching methods, special education programmes, business and industry to promote the gifted and talented.
There are six theories on the origin of creativity. Early theorists assumed creativity to originate from a single source mostly external and at times internal when the individual has no control over it. Creativity is a normal behaviour and an inherent quality of human life. Reactionists believed the individual as shaped by forces outside his control and expressed through him. Descartes regarded creativity as emanating from the mind like language and reasoning.

Vitalism a theistic conception found creativity the product of some mystic reality and resulting from "divine inspiration".

Nativism stated creativity to be a hereditary endowment.

Galton (1870), Kretschmer (1931), Hirsch (1931) regarded it as a product of the intermarriage of superior individuals from differing racial and national groups. The nineteenth century romanticists saw only fine arts and poetry as creative. One view was that it appeared dramatically through inspiration. The psycho-analysts found creativity lying in the unconscious. Fairbairn (1938), Grotjahn (1932) regarded creativity as the 'restitution of destructive impulses'. Kris (1952) suggests the 'regression in the service of the ego'.

Sociologists found creativity originating from culture and emerging from it. McLean (1941) traced the source of creativity to serendipity when a person actively thinking of a problem meets a 'happy accident'.
The interpersonal dynamism of creativity was recognized by Osborn (1953) who found people teamed to work with the right partners showed more effort and power of association. This view is supported by Gordon (1961) and Prince (1970). Gutzke and Csikszentmihalyi (1967) found creativity embedded in the deeper layers of the personality, in values and motives of artists and scientists. Goldstein (1939) mentions of the drive in self-actualization and Rogers (1954) found the curative force in psychotherapy as man’s tendency to actualize and become his potentialities. Nodd (1974) introduced an existential note to the personal origins. Taylor (1971) suggested transaction involving control and responsibility. Several investigators emphasize the transactional bio-experiential bases of creativity. Schachter (1971) emphasized openness and free play as important sources of creative experience.

Among Western philosophers Empiricists found creativity resulting from experience taking two forms sensation and reflection. Rationalists state that ideas arise from reasoning and from experience. Idealists found creativity the resultant of experience, reason and intuition.

Among Psychologists Gestaltists define creativity as reconstruction of patterns of gestalt. Creative thinking arises from unsolved or incomplete problematic situations.
weighted combinations of intellectual factors. This shows that creativity is not limited to recognized geniuses, but is a distributed trait throughout the human race. It is a composite of a number of abilities and traits, (Spearman, 1930; Rogers, 1962). Smith Guilford enumerates nine factors of creativity as word fluency, ideational fluency, semantic, spontaneous flexibility, figural, associational fluency, flexibility, originality and elaboration. In creativity all these interplay with the problems and their evaluations.

It is widely accepted that creativity study is dynamic, complex and challenging calling for more rigorous and varied investigations. Khotena (1975) says we will make mistakes in identifying and interpreting creativity but that human existence is based on such mistakes and their correction. The study of creativity should be multidimensional. Western approach is objective, reality oriented and intellectualistic. The Eastern approach can also give worth while clues (Raina, 1980).

Creativity studies have investigated several correlates and as heredity, environment, cognitive factors, motivational factors, emotional and intellectual factors. The study of the creative personality is an on-going process. Fromm, Rogers, Maslow have listed several traits. Fromm speaks of the traits
to puzzle, to concentrate, accept, conflict and the willingness to be reborn everyday. Rogers emphasizes openness to experience, internal locus of evaluation and toying with elements and ideas. Maslow's extensive list includes spontaneity, expressiveness, tolerance of bipolarity, ability to integrate opposites and belief in self-actualization. Guilford accepts the use of temperament and motivation as indicators of creativity but also considers aptitude to identify and enhance creativity.

The foregoing conceptual background leads on to the difficult and important aspect of the measurement of creativity.

**Measurement of creativity**

Torrance (1960) offered the following reasons for assessing creative behaviour.

1. As a means to understand completely the human mind and personality.
2. To form a basis for individualizing instruction and training.
3. To find sources for remedial and psychotherapeutic programmes, to aid mental health and mental growth.
4. To assess the differential effects of experimental programmes.
5. To indicate growth potential and guidance needs.
Intelligence tests do not identify creative talent (Gatzele and Jackson). This raises the question what factors contribute to creativity and how do we measure creativity?

Creativity is not the outcome of intellectual factors alone. Hence intelligence tests were found inadequate to measure creativity. Creativity comes to the fore when there is freedom of expression. Because of this many objected to the use of tests for measuring creativity as it provided only a structured situation which goes against the very nature of creativity which by itself is spontaneous. When tests were timebound it was found detrimental to creative expression for creativity can occur at any time. Creative persons were found self-sufficient, capable of independent judgement, open-minded and willing to take risks besides being spurred on by adverse circumstances. They also were persistent in action and loved their work.

The production of instruments to measure creativity started with the work of Gearborn (1898) who used ink blot tests to study imaginative responses. Ink blots, drawings, paintings, verbalisation, uncontrolled associations, fanciful explanation, fantastic stories have all been used to determine creativity.
Mednick on the basis of the associative theory developed a test known as the Remote Associates Test (RAT) assuming that highly creative individuals will make a greater number of associations to a given stimulus than one of lesser creative potential. MacKinnon found from his studies that majority of creatives were of the perceptive type, open and receptive to all experiences. He used the Myers-Briggs type indicator based on Jung's typology to identify creative people. Wild studied art students using 'Given Word Association' and object sorting test and found art students capable of shifting from regulated to an unregulated whimsical person. The Barron-Welsh Art Scale has been used to discriminate between creatives and non-creatives. Osborn as early as 1953 applied the principle of separating the 'process of producing ideas' from the 'process of evaluating ideas'. He used brainstorming to stimulate creativity and generate ideas. Torrance has used imaginative stories, block printing, vague shape of dots and ideas to use things to measure creativity. Torrance with Henrickson in 1960-61 used 'just-suppose' exercises to make students project themselves. Myers and Torrance in 1965 made children 'think about things' e.g., what would you make slower to make it more successful. Again we find Cunningham and Torrance in 1965 used 'Imagicraft' materials and involved children in a variety of future projections through recorded dramatizations. A series of games was also used to encourage
children to project themselves into various kinds of societies and deal with its problems like pollution in a capitalist country or population in a communist country. Osborn's problem-solving technique was thus found useful in assessing creativity. The SOWL is inter-scholastic future-oriented problem-solving used by Torrance, Myers, Parnes, and others. Alex F. Osborn also used check lists of a series of verbs which could change an individual's mental set as one contemplates a problem-solving situation. Words like magnify, minify, rearrange stimulate, creative thinking. He also tried 'Forced relationship' attribute listing. A morphological approach applied attribute listing with forced relationship in a matrix approach.

Inkblots of Kilpatrick, Drawings of McCarthy, Paintings and verbalisations while painting of Gripen, Tachistoscopic presentation of tasks by Andrews, observation of standardized situation by Markey were all used for identifying and measuring creativity. Some of these have also been found inadequate for the purpose.

Getzels and Jackson used four adapted tasks (word association, uses of things, hidden shapes and fables and constructed make-up problems) whereas I gave a battery of tests of originality consisting of maxim word building, picture
writing, analogies, completion test and novel situations. Borenz used tests of imagination. Hargreaves suggested 26 twelve tasks to assess fluency and originality. Myers and associates used Interpretative titles to pictures in combination with other tasks. Guilford has given a battery of tests, Torrance contributed check lists, verbal and non-verbal tests of creativity which is being widely used. Wallach and Kogan may be credited with demonstrating the distinction of creativity domain from intelligence. They constructed a set of procedures which originated in Guilford's work on measurement of creativity. They limited their assessment to frequency, uniqueness in line with their associative conception of creativity. They used both conceptual and perceptual stimuli. Joe Khatana used verbal imagery and auditory imagery to determine creativity. Gough used adjective check lists. Gary's How do you think (HYEI) test has 111 items drawn from previous researches presented on a five point scale. Paul Torrance has also used socio-drama as a creative problem-solving approach.

In India we have Baquer Mehdi's Test of creative thinking, Passi's Creativity Test and K.N. Sharma has used 'How I perceive myself' scale with twenty two items to be marked on a three point-scale. Paramesh's Remote Associates Test (PART)
Chatterjee has a fine arts subtest in his non-language preference record Welsh's Figure Preference test with four hundred black and white line drawings has been used by Ramas Ray Chaudhuri in the study of musicians accepted as creative. The most popular tests are those of Torrance and that of Guilford. Verbal and non-verbal tests have been used. Analysis shows the need for developing new tests of creativity to suit various purposes and situations.

Creativity is a complicated and amorphous area of study and multiple measures have to be used to identify creativity. Besides these there are non-testing techniques as curiosity, teacher or peer rating, overflow of ideas, flexibility in meeting emergencies, constructiveness, unwillingness to give up, day-dreaming, fantasising and the like.

The outcome of this overview is the realization of the need for further study with newer methods and of untramelled areas in the field of creativity. It is based on this that the succeeding chapter analyses the approaches, tools and methods of study in other related studies to help the designing of the present study.
8. RELATED STUDIES - A REVIEW

This chapter reviews related researches in the field of creativity with a view to understand the methods, instruments and variables used. The perspective gained from such an exercise helped in determining the plan of study, selection of variables and the framing of the hypothesis.

Guilford's famous presidential address before the American Psychological Association in 1950 provoked many investigators to study creativity. Commenting on the progress made since then, Torrance (1975)* states that there has been an unprecedented amount of research into the nature and nurture of creativity. It is time to ask after all these years what do we know about creativity?

Several articles and papers presented at Symposia in the field of creativity have been published by Anderson (1959), Stein and Neinze (1960), Gruber, Terrell and Wertheimer (1962), useful summaries by Lolan (1963), Taylor (1964), Barron (1965), Tyson (1966), Mooney and Magik (1967) and Cropley (1967). In India the papers presented at workshops and seminars have been published by Rais Ahmed and others (1972), Baquer Mehto (1977) and Meina (1980).

*E. Paul Torrance - After twenty five years what do we know about creativity. Creativity in Teaching and Learning edited by Baquer Mehto - Regional College of Education, Mysore, NCERT. New Delhi, 1975.
The review of literature shows that to a large extent creativity studies are from the field of Education particularly of school children. Various dimensions of creativity, nature of creativity, measurement of creativity and personality variables related to creativity have been studied scientifically. Though there is proliferation of research on creativity, critics feel that only the surface has been scratched and that there has been no major breakthrough. There is need for more rigorous and varied investigations (Latorre, 1975).

The western approach to creativity is mostly objective, reality-oriented and intellectualistic. Eastern approach is intuitive. An East-West approach will be illuminating (Haas, 1956; Kelman, 1963; Hugg, 1963; Arashtah and Arasteh (1976). Such an approach Gouan (1974) believes will be a boon to the on-going research, Ainsa (1980).

The following pages are devoted to a review of related work done in (1) other countries (2) India.

**Studies done abroad:**

Guilford (1950) attempted the first systematic study of the dimensionality of creative thinking which was the outgrowth of Spearman's (1904) concept of general intelligence. Guilford regarded divergent thinking as an operation of the
mind involving the production of as many answers as possible to a problem. It concerns itself with thinking in different directions, searching, seeking variety. He also showed that abilities of fluency and flexibility in thinking bear a special relevance for creative thinking. Following Guilford's work a number of investigators studied creativity and intelligence (Wilson et al., 1954; Guilford and his collaborators Christensen, 1956; Torrance and his co-workers Torrance, 1960; Getzels and Jackson, 1962; Richards and Abe, 1962; Torrance and Gowan, 1963; Uline Richards and Needham, 1963; Fleischer, 1963). Evidence led to the conclusion that various creativity measures utilized are strongly related to general intelligence than to each other.


Jean Schumacher and Clark (1957) constructed a special battery of tests to discriminate creative from non-creative
developmental engineers. Getzel and Jackson (1962), Yanomoto (1963), Hudson (1963) found significant linear correlation between intelligence and creativity. Mackinnon and Roe studied creative architects and found that certain amount of intelligence is necessary for creativity. Thus it is found that several studies have been done in this field especially because of interest in the field of education.

Age and Creativity

The relationship of age and creativity has been studied by several persons foremost among them being Torrance. Torrance's tests were used in measuring creativity at various age levels. Cross-sectional studies made by Torrance showed a generalized developmental curve which also showed decrease in creative thinking, fixed just before entry into Grade 1 again in Grades 4, 7 and 12. They also found growth peaks in Grades 3-4 and again around Grade 11. The worst drop was found in Grade 4 and came to be known as the fourth grade slump. Torrance (1968) also undertook a longitudinal study of 100 children over 4 years and found evidence for slumps in creativity of 45% to 55% at the fourth grade level. A few children however showed increased creative thinking ability. Studying the slump in other cultures to determine its pattern he concluded that creative development is relatively continuous in some cultures. There is not much of a noticeable
difference in the elementary school years. Yet most of the cultures do show discontinuities at the end of the third grade and beginning of the fourth. Khatena and Torrance (1973) studied 1365 children from Georgia who and found two slump periods between the ages 8 and 19. One occurred around 4th and 5th grade and the other at the 10th grade level or at the age of 15.

Parloff reports after studying carefully selected high school seniors who are similar in age, socio-economic background, intelligence and scientific aptitude but differing in rated creativity that there is no reliable differences in age and socio-economic status with regard to creativity.

Lehman (1964), Torrance (1955) found possible relationships between age and creativity though Dennis (1964) doubts the findings. Burgers (1971) reported a statistically significant age difference on the verbal fluency scale. Alpaugh, Patricia Kanner, Jayne and Birren Janes (1977) found decline in creativity with increasing age.

Most studies on the relationship of age and creativity are limited to particular age groups and educational level. The various cross-sectional and longitudinal studies of the rise and fall of creative thinking at various age levels gives us only an incomplete picture of creative development
from childhood through adulthood and points to the need for further studies in this area. The study of creativity at primary level by Savoca (1968), elementary school years by Reid (1960), Getzel and Jackson (1951), Karsten (1968), Ogletree (1971), Huttall (1971). High school years have been studied by Hovlin (1959), Feld (1960), Tivellas (1968). College students by Nelson (1968), Simms (1970) and adult years by Hoc (1958) and Mackinnon (1962). Simon, Clark and Galwey (1967) studied 5000 women Ph.Ds.

While the first four deals with the educational set up the later studied eminent men and women from different fields, artists, architects, scientists, etc. Even these studies are mostly of men. It is evident therefore that there are few studies of women in general in the age group 20 to 50 years thereby showing a neglected area of research.

Sex on Creativity.

Strauss (1955) found sex difference in creativity greater in India than in America and reported lower scores for girls than boys in Indian and American societies. Some investigators report male superiority (Hudson, 1968; Torrance, 1962); and others female superiority, (Gulford, 1967; Wallach and Wing, 1969). Majority of studies failed to uncover a systematic superiority of one sex over the other (Feldhussan and Benny, 1965; Klunamier and Weiama, 1965; Torrance, 1935;
Wallach and Kogan, 1965). These empirical outcomes suggest that neither sex is at an advantage in regard to creative potential.

Mar (1971) compared 60 Arab and 60 American eighth class pupils and found Arab males performed better than Arab females in ninth class. There are other studies where we have mixed results. Ugochukwu (1966) studied 1165 subjects through 6th class to 10th class in England, Scotland and Germany and observed that girls excelled boys significantly on all creative measures verbal and figural and that only in Scotland boys obtained higher figural scores than girls.

McGregor and Smith (1966), Solomon (1968), Walker (1969), Cacana (1971), Burgess (1971) studied pupils from 1st to 6th class and reported like Harrison (1973) the superiority of girls over boys on several creativity measures and that high school girls excelled boys in creative thinking abilities. Alliott (1975) found females superior to males in figural creativity.

McLelland (1962) found men are more likely to be creative scientists than women. Simon Clark Galway (1967) surveyed more than 5000 women who took their Ph.D. between 1958 and 1963 in natural and social sciences and failed to show sex difference in quantity of publications. But a
variety of situational contingencies were found not to have the same impact on the performance of males and females.

The research of 1960's and 1970's indicates that sex differences in creative thinking abilities are fading out. Klosa (1972) found no sex difference in creative thinking ability. All these indicate the relative inconclusiveness of sex differences in creativity (Garai, 1966). Kogan Nathan (1974) studying creativity and sex differences suggested that the greater susceptibility of women to distractors related to social context, may handicap their creative accomplishment.

Creativity and Socio-Economic and Home Factors

Hoe (1952) studying the life histories of highly productive people found certain amount of common family home and school conditions conducive to creative output and that half the fathers were well to do and had good income. Rivlin (1959) found parent's education associated with creativity in High School students. The importance of environmental stimulation was emphasized by Murphy (1951), Barleyne (1960), Denenberg and Bell (1960), Fiske and Reddi (1961).

Chamber (1960) studying social scientists found no difference with respect to socio-economic class. Reid (1960) found lower class boys a more confident, self-sufficient and creative than lower class girls who were less confident and
non-creative. Weisberg and Springer (1961) found the degree
to which the father was professionally autonomous was very
significantly associated with children's divergent thinking
ability and like Muttall found correlation with maternal
control.

Stein (1965) studied socio-economic factors determi-
nining creativity. Knapp (1963) studying the origin of American
Scientists found 9% came from the upper middle class and of
non-white collared occupations. Skager, Schultz and Klein
(1965) found no correlation between socio-economic status
and creativity measures. Smith (1965) compared higher levels
of socio-economic status with lower levels and found the higher
superior to lower in verbal factors of creative thinking and
the lower level better in non-verbal factors. Anderson (1966)
found high socio-economic group congenial to the development
of creativity. Nelson (1967) found in her studies definite
and distinct personal histories in the case of creatives.

Savoca (1966) studied the socio-economic factor and
creativity of very young children. He analysed originality
figural flexibility, semantic fluency and flexibility and
found high socio-economic group scored higher (P=.001) on
creative measures than low socio-economic group. Hodgkinson
(1967), Shapiro (1972), Harrison (1973), William et al. (1973),
Dawing and Taft (1973), Ward and Cox (1974) are others who
studied socio-economic status and creativity.
Karsten (1969) studied 201 thirteen-year-old Negro pupils of 20 schools from Southern California. He found no significant difference in measured socio-economic status in culturally advantaged and disadvantaged groups on six measures of creativity that of making objects, utility tests, figure production, seeing problems, symbol production and object synthesis. Ugelstee (1971) studied 479 English, 193 Scottish, 493 German pupils including 557 boys and 608 girls and found the upper middle class significantly outscored middle and lower class peers in most creative measures and the middle class scored higher than the low socio-economic group. Lowan (1971) studied parents of 100 gifted children, identified at Summer Laboratory School at San Fernando Valley State College and found that creative children had early enrichment and stimulation. He did not attempt statistical treatment.

Nuttall (1971) studied suburban and middle-class children and found no correlation between socio-economic status and performance on Minnesota Tests of creative thinking but positive correlation between socio-economic status and creative measures on Stewart-Teacher rating scales. Moreno Joseph and Hogan John (1976) studied the influence of the race and social class level on the training of creative thinking and problem-solving and found race and class difference.
The effect of school environment was studied by Thistlewaite (1959), Trazia (1966), Walker (1969), Neuburg (1970), Kramer, Tagen Knauber (1970), Fox (1971) - most of these studies revealed no significant difference between open class room and coercive class room. Shain (1972), advocated open space schools. O'Neill (1976), Wall, Zipursky and Suits (1976) found relation between informal setting and creativity. Pioneering work of Hubbard (1955) and Payne (1957) added to the knowledge of creativity in education. Others who worked on this field are Gatzals and Jackson (1962), Kethner, Guilford and Christensen (1959), Wilson, Guilford and Christensen (1953), Wallach and Kogan (1955).

Kapler (1970) studied the effect of home environment and assessed the creativity of 70, 5th graders by using Wallach and Kogan creativity tests and Schaefer Parent Perception scales. The results showed high controlling and low nurtured males lack in creativity and sons whose mothers are more controlling and hostile were less creative. Nuttall (1971) selected 6th graders (N=189) among suburban children of suburban homes and administered the Minnesota tests of creative thinking, Stewart Teachers' ratings and giftedness scale. He considered those whose scores were in the upper quartile as high creative and those in the lower quartile as low creative and studied parental attitude research instrument (PAHL). Results showed parental and maternal acceptance
positively correlated with teacher's ratings and negatively correlated with maternal and paternal psychological autonomy. Elson (1971) perceived parent-child relation and creativity of 160 college students and found insignificant difference in familial environment between high and low creatives. Heilburn (1971) found in 96 undergraduates of Emory University those with high control and low nurturance lacking in creativity. Reid (1972) studied 47, 3rd grade boys and found no significant relation between specified home variables and creativity in a stepwise regression analysis.

Available literature does not show any work done on the relation between creativity and marital status or on creativity and the type of family (nuclear or joint) except a few on home influences mentioned earlier.

Creativity and personality:

There are several studies on creativity and personality. Galton (1970) emphasized the heredity of genius. Cattell, Rieck (1915, 1917), Brimhall (1922, 1923) also studied creativity basically from the heredity point of view and tried to find out their typical characteristics. Terman's monumental longitudinal studies (1925, 1930, 1947) followed 1000 subjects for forty years and found in the scientific talented, stability,
absence of disturbing conflicts, all round social adjustment, well balanced temperament and freedom from excessive frustration. His study shattered Lang's Eichbaum (1932) theory that genius is associated with mental abnormality. Kretschmer (1931) found significant scientists showed 'lively originality' vibrant sensibility and inward tension. Cattell and Bem (1965) found the scientific researcher Schizothymic, more intelligent, more dominant, more inhibited and more emotionally sensitive. In Cattell's (1963) opinion creativity lies in personality and values and not in cognitive skills.

Galovin (1963) suggested an information theory and suggests a computer model for the central nervous system. Eysenck (1956) found second order factor analysis produced two 'super factors' which strikingly resemble the dimensions of neuroticism and extroversion.

An Rie (1952) examined 64 eminent scientists and used case study, intelligence tests, projective techniques, Rorschach tests, Thematic apperception tests and raised the issue of visual as opposed to verbal forms of imagery.

On Myers-Briggs type indicator based on Jung's typology creative people were found to be perceptive type. On Warren Helen art scale creative architects showed preference for complex and the asymmetrical in pictures. California
Personality inventory and other tests showed creative men sensitive to other's feelings and flexible.

McKeller (1957) found reality adjusted and autistic thinking in creative production in arts and sciences. He used the M-M-P-I- and his studies revealed high scores on ego strength.

Barron (1955) studied 100 U.S. Air Force Captains found creative captains self-assertive, domineering, and personally complex. Barron (1957) studied the sample with other instruments and found them to be clever and imaginative.


Chambers (1964) used Cattell's and Stices I.P.F. questionnaire, biographical inventory and Chiellino's self-descriptive inventory and studied 740 male scientists, 400 chemists, 340 psychologists and found them to be generally introverted unconventional and imaginative.

In none of these studies has the personality of the creative woman as housewife mother and breadwinner been studied.
Creativity and interest patterns:

Hae (1959) studying eminent researchers judged by peers found interest in engineering, outdoor activities, athletics, literature, writing and drawing among creative people. MacKinnon studying retrospective reports found very early interest and skill in drawing and painting among creative architects.

Morton (1967) studied the relation between creativity and vocational and avocational interest and found significant correlations showing moderate relation between artistic, linguistic, mechanical interest and two creative tests, alternate uses and consequences. Nelson in 1968 studied women mathematicians and college seniors of varied interests and found interaction between creativity and interest reached 0.01 level of significance. Simms (1970) studied 473 freshmen (male and females) from liberal arts colleges and found high creative females were interested in natural, aesthetic and literary occupations. This was also found by Anderson (1960).

Creativity, achievement, motivation and aspiration:

McClelland (1953) found successful scientists like successful salesmen, businessmen and entrepreneurs had higher need for achievement because of high motivation.
Peck (1958) studying engineers demonstrating inventiveness found their motivating urge in unusual persistence. Hammer (1969) found stronger determination and ambition in creatives. Holland (1961) studied the creative performers of High school students chosen from National Merit Scholarship Corporation and found they aspired for the future. Parloff and Datta (1965) studied 2,500 males selected from Westinghouse science talent search and science aptitude of the upper 1/5th and found that high creative are more ambitious and driving. In 1968, they studied 5000 successful male adolescent students and found similarity between adult and adolescent creatives. Nelson (1966) studying women with imaginative and artistic interests found they needed autonomy and had strong motivation to take creative roles.

Fajana (1933), Frank (1939), Jones Conrad and Blanchard (1932) found goal setting depends on the 'ideology' of the person. Sears (1942), Steisel and Cohen (1951) have consistently shown that failure decreased one's level of aspiration and success increases it.

Torrance and Vauw (1956) studied 115 high creative high school seniors and found them frequently achievement oriented. Yamamoto (1967) studied the relationship between creativity and achievement. Lett (1969) studied the relation
between Nach and creative potential of 359, ninth standard school students and found high need achievement and high creativity were found together for both males and females.

Creativity and anxiety:

Haggard (1949) found anxious subjects in stress situations show characteristic changes in many aspects of psychological functioning. Studies also show that at lower levels of anxiety there is generally an integrating of behaviour and an increase in the ability for productive performance. Zuckelman (1955) showed that low anxiety contributes to progressive facilitation and high anxiety enhances performance over time in intellectual tests.

Reid, King and Vickwire (1959) reported relationships between creativity and anxiety in seventh grade children. Arthur Koestler (1959) found in studying geniuses that the common feature among them is open mindedness and anxiety. Schneider (1959) studied rating of adjustment made on the basis of college records and Rorschach tests and found no relation between potentially creative to adjustment which included minimum anxiety.

Weite (1959), Stroop (1935), Saramon (1960) found a class of tasks and conditions of administration where anxiety is associated with higher levels of performance in their anxiety facilitating studies. Cross, Cattell and Butcher found higher anxiety level among artists and
that they differed in the ways of thinking and perceiving. Stein and Heinze (1960) found serious gaps in our knowledge of the relation of children's creativity and intelligence to their level of anxiety and defensiveness. Fleischer (1963) reported absence of relation between either general or test anxiety and composite creativity score. Kuebush (1963) cites 19 studies which found moderate negative relationship between creativity and anxiety. Feichussan, Denny and Condon (1965) found little relationship between general anxiety and four creativity measures in the 7th and 8th graders. The creativity indices were minimally related to one another.

Matina Horner (1969) found women consistently show higher test anxiety score than men. Kobayashi (1970) studied 9th graders of Japan preparing for college and found positive relationship between anxiety and creativity. Eisenman and Grosman (1971) studied creativity, introversion and extroversion and anxiety among 106 men and 125 women college graduates. The findings showed 0.22 co-efficient of correlation for men and 0.26 correlation for women (p < 0.5). Blackhall (1971) administered Torrance tests of creativity, verbal and figural Form A and found statistically significant relationship between verbal creative thinking and personality factors and figural creative abilities and less anxious.
Cattell and Gorsuch (1967) on the basis of mathematical and statistical considerations found major factors in the correlation between Cattell 16 P-F. Scales were anxiety (neuroticism) and introversion-extroversion. Joesting Joan and Joesting Robert (1974) studied the correlation among women's views of contraception, anxiety, creativity and equalitarianism and found the rapidly changing role of women tending to increase anxiety.

The Yerkes-Dodson function relates anxiety to achievement. It relates higher levels of achievement with moderate levels of anxiety. Those who reported moderate degree of anxiety were most creative in their thinking processes.

Creativity and self-concept:

It has been demonstrated that differences exist in self-conception of persons according to social and psychological variables (Sarbin, 1955).

Elliott (1964) found significant positive relationship when he correlated semantic test a scores with creative ability of advertising and public relations personnel. Seittel (1964) failed to see relationship of self-concept with criteria of creative performance of college art students.
Schmidt (1973) through multiple regression analysis found creative architecture students scoring low on social acqui- sences and high scoring on work attitude. Pearson, Stanley (1975) studied the theoretical relation between personality factors, self-concept and creativity and perception of the ideal pupil by teachers. Studies of self-concept and creativity of 10th graders have been done to compare over and under achievers with normal children. Russell Dale (California) correlates sex and anxiety to divergent production, convergent production and self-concept in rural and disadvantaged children. Marianne Burnes (Minnesota) studied relationship of self-concept and peer judgement on creativity. Frank Williams (1976) in rediscovering the 4th grade slump in creativity found that in spite of severe home and family stress among the population tested, personal feelings about self were positive and remained above average though the subject had negative feelings about school.

Studies done in India:

In relation to the creativity studies done abroad India has done very little. Some of the studies done are examined below.

Age, Sex and Creativity:

Dennis (1960), Raina (1970), Paramesh (1971) and Goyal (1974) found no influence of age on creativity among
children. Zahida Zaidi (1972) found in empirical studies peak period of creativity occurring at widely different ages.


Pathak (1962) found no sex difference in creative thinking ability. Pareek (1966) studied 60 boys and 60 girls with regard to creativity and personality adjustment. Raina (1971) found negative but not significant relationship of fluency with age. Java (1971) studied female college student Singh (1972) studied 131 boys and 108 girls. Sathyamurthy found sex variation in originality of verbal creative thinking Gagneja (1972) studied creativity in relation to sex of ninth class students.

Socio-economic factors, home background and creativity:

Personality factors and creativity:

Paramesh (1971) was the first to attempt systematic research employing the associative conception of creativity in the Indian setting and understand its relation to personality variables. Kaine (1971) found high creative females higher in change and endurance than high creative males.

Sharma and Sharma (1969) found artists have more conflicts with parents than non-artists. Nair (1977) found art students differed in emotional stability, personal relations, thoughtfulness and masculinity from normal college students revealing that the aesthetic person has a particular personality pattern. Keer and Abraham (1962), Sharma (1972), Pessi (1972) found no relationship between creativity and achievement and positive relationship between intelligence and creative thinking. Sharma (1974) also found positive relationship between creativity and intelligence. Zahida Zeidi felt talent depended on cultural environment, home background, social institutions and traditions which play a significant role in creativity.

Self-concept and creativity:

Vasantha Ramkumar studied self-concept and achievement with reference to intelligence, sex, influence of family,
parent's occupation and level of aspiration, but has not
dealt with creativity. Hassan and Akbar (1973) studied self
and ideal self-descriptions of 'high' and 'low' creative
undergraduates. Laxmi (1972) compared high and low creatives
with regard to their self-image. Pasi and Lalitha (1975)
studied creativity and self-concept of adolescents.

Creativity, interest, aspiration and achievement:

Bhattacharya (1955) studying proved artists found
them having shallow feelings for life and highly sensitive.
Ray Chaudhry (1962) studied creative musicians psycho-diagnos-
tically and found them marked by emotional and temperament
characteristics more than by cognitive and motivational aspect:
Voyal (1964), Varmaan (1974) studied the relationship between
creativity and achievement. Bhan (1973) studied creative
potential and level of aspiration. Kuppamal (1973) studied
creativity and its relation to level of aspiration among
adolescents. Studying a sample of 249 adolescents both boys
and girls she found positive and significant correlation
between composite creativity index and performance aspect of
are others who studied creativity, motivation and achievement.

Creativity and anxiety:

Nearest approach to the study of creativity and
anxiety was done by Ray Chaudhry (1964) who found artistic
creativity a channel for self-expression providing considerable relief from tension.

Gakhar and Luthra (1974) and Arora (1976) studied the relationship between creative thinking and anxiety.

A survey of these studies point out to the need to study creativity in women aged 20 to 50 as there are very few studies (Helson, 1966; Simon, 1967; Eisenman and Grosman, 1971) in this area. Self-concept, aspiration level and anxiety of women in relation to creativity is another area requiring study which this study undertakes.

The various tests of creativity used show the most popular ones are those of Torrance, Guilford, Wallach and Kogan. Tests of alternative uses, consequences, ideational fluency, plot titles, remote associations have been used. Many observers that tests of creativity provide a structured situation quite unsuited to measuring creativity that is spontaneous. To overcome this the investigator uses a retrospective study of creative incidents which could have happened at anytime in a free atmosphere which is a new approach.

Creativity studies show that sources, processes, dimensions of creative experience, the psychological and environmental conditions of being creative, personality traits
and creative production have been studied. Creativity is found to be a specific ability which is cognitive and involving the individual's personality, emotionality and affected by one's personal and interpersonal life which an individual chooses for himself.

Creativity has been studied from various aspects, but little has been done to explore creativity through various day to day activities of women which are problem-solving, useful, productive and divergent in nature. Not many efforts to study the psychological implications of changing societal demands on women have been done (Vatshela Mehta, 1950; Hajaltekhami, 1966; Lalitha, 1972). Women today are confronted with a lot of problems. Several investigators have emphasized that problem-solving is indicative of creativity (Milton, 1961; McPherson, 1964; Roy, 1973; Tasea, 1974; Reddi, 1975).

Since creativity study is in its infancy there is the possibility of researchers breaking new ground to adapt the dynamics of creativity to suit India's cultural context (Reina, 1980). This study is directed towards (1) the development of a tool which can measure creativity in women, and to determine whether (2) adult women are creative at all age levels when they had productive lives (3) whether the socio-economic factors affect creativity (4) whether marital status
has any influence on creativity (5) to find out of types of
families such as nuclear and joint families affect creativity
in women (6) to determine if there are differences in creati-
vity among students working women and housewives. (7) To
determine to what extent the level of aspiration affects
creativity (9) to find out if there is a relation between
self-concept and creativity and (9) the relation between
creativity and anxiety as found in women. This review
has been a pointer to the investigator as to the method to
be used, variables to be studied and the tools to be construct-
and modified and to determine the sample. These have been
dealt with in the succeeding chapter along with the hypothesis