NOTION OF IMPLICIT CREATIVITY AMONG INDIAN STUDENTS: A SOCIAL PSYCHOLOGICAL STUDY OF GRADUATE AND POST GRADUATE STUDENTS IN ALLAHABAD

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirements for the award of the degree of

MASTER OF PHILOSOPHY

RAJEEV KUMAR YADAVA

ZAKIR HUSAIN CENTRE FOR EDUCATIONAL STUDIES
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI– 110067
2003

JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110 067

ZAKIR HUSAIN CENTRE FOR EDUCATIONAL STUDIES
SCHOOL OF SOCIAL SCIENCES

21 July 2003

CERTIFICATE

Certified that the Dissertation entitled **"Notion of Implicit Creativity among Indian Students: A Social Psychological Study of Graduate and Postgraduate Students in Allahabad"** submitted by **Mr. Rajeev Kumar Yadava** for the degree of **Master of Philosophy**, is his own work and has not been submitted by him or anyone else for any other degree or diploma of this or any other university.

We recommend that this dissertation may be placed before the examiners for evaluation.

Prof. Deepak Kumar
(Chairperson)
Chairperson
Zakir Husain Centre For
Educational Studies
School of Social Sciences
Jawaharlal Nehru University
New Delhi-110067

Dr. Minati Panda
(Supervisor)

Tel.: (011) 6107676 & 6167557 / 4416, 6704416 Telex : 031 - 73167, JNU IN, Gram : JAYENU
Fax : 91(011)6198234, 6165886, 6101841

ACKNOWLEDGEMENT

At the outset, I have pleasure in accepting that the completion of this project has given me immense satisfaction. During the selection of the project topic, my supervisor Dr. Mrs. Minati Panda, played a key role. It was only her contribution, active guidance and untiring patience that helped me and my study in meeting its logical end. This work done under her has enabled me to enrich my knowledge and experience bank. I, therefore wish to express my gratitude to her for the same

I am extremely thankful to all the faculty members of Zakir Husain Centre for Educational Studies for their encouragement and support. I am grateful to the library authorities at NCERT NIEPA, JNU and Allahabad University for allowing me to consult their valuable collections.

I would also like to thank my seniors and friends who have encouraged me to excel during the course of this project.

My special words of thanks goes to Dheeraj, Pathak Sir and Shaily, who have rendered all possible help during the final drafting of this report.

Finally to my parents for their support, patience and encouragement always.

Rajeev Yadava.

RAJEEV KUMAR YADAVA

DEDICATED TO

MY

BELOVED PARENTS...

CONTENTS

LIST OF TABLES

CHAPTER-1

INTRODUCTION

Creation of man is the culmination of God's creative pursuit. The hidden and expressive endowment of this creativity in man reflects the creative endeavour of the almighty creator. However the true nature of creativity has not been fully understood as yet. Its nature is so complex that it still remains shrouded in mystery and efforts are to be made for unfolding its multi-dimensional character. The ways are to be paved for healthy expression of creative potentials with which human beings are endowed. If one fails to do so the potentially creative individual may start suffocating and divert his/her creative endeavour in to destructive channels.

The present age is characterized by confusion, tension and violence. The creative ability seldom gets proper channels for its utmost expression. The creative imagination of a child is lost amidst highly mechanical and routine life. This had posed a serious problem before the Psychologists and Educationists. The creative potentials, present within a person, if not properly expressed through constructive channels, would generate suffocation and divert his/her creative ability towards destructive tendencies. If the constructive and imaginative endeavour is not properly catered it will generate more and more frustration with in the individuals. Any blockage to creative expression on the part of human beings will lead to their psychological death. The human being who is the supreme creation of God may not justify the purpose of his/her existence which is meant for creating something novel on this earth and ultimately to add beauty to his creator's gift.

The present educational system and unrealistic syllabi, are so taxing to the growing children that their creative imagination is suppressed and blocked most of the time. While speaking at an international conference at Delhi in January 1986, Dr. R. Ramanna, Chairman, Atomic Energy Commission, has cast doubt over the contribution of formal education to creative development of children. He had posed a question: Are children being exposed to too much knowledge in their rapid advancing world today at the cost of stunting their creativity? The education must not only aim at intellectual development but also at creative expressions.

Such discussions and arguments are indicative of the past that creativity is an important subject for scientific investigation and empirical study. Various problems

related to the proper expression of creative potentials need thorough discussion and exploration as well as understanding of the nature of creativity in its diversified forms. Only when the concept of creativity is fully understood in different contexts one can provide ways for its channelization.

The analysis of creativity from conceptual and empirical angles constitutes a subject of valuable investigation. Fortunately people have realized the necessity for exploring the true nature of man's creativity, which is reflected in rich literature available on creativity. The review of such literature indicates that creativity has been examined in a conceptual as well as empirical context. The findings associated with various problems of creativity are controversial in nature. Creativity is to be analyzed from a multidimensional approach as it is a highly complex cognitive ability. The controversy regarding the agreed definition of creativity clearly suggest the multiplexity underlying the explanation of creative behaviour.

1.1 Concept of creativity

In the long course of its history, educationists as well as psychologists have experimented with life from various angles and at various levels. The psychologists long ago discovered that among the various concepts and phenomena, the phenomenon of creativity is the most significant criterion in Psychology and Education. The contention of this statement was again laid down by the well-known historian Arnold Toynbee (1964) who declared that, "to give a fair chance to potential, creativity is a matter of life and death for society. This is all important, because the outstanding creative ability of a fairly small percentage of the population is mankind's ultimate capital asset... potential creative ability can be stratified, started and stultified by the prevalence in society of adverse attitudes of mind and behavior." Torrance (1962) has also remarked as- "it takes little imagination to recognize that the future of our civilization- our survival- depends upon the quality of creative imagination of our next generation." Again he aptly remarked, "Democracies collapse only when they fail to use intelligent imaginative methods for solving their problems. Greece failed to heed such a warning by Socrates and generally collapsed." Over centuries the Indian philosophers have given deep and abiding thought to the theoretical and philosophical

aspect of creativity. They described this phenomenon as '*navanavomeshashalinipragya*' i.e. man is creative in his ability to create new forms. The concept of creativeness is not based on any magical mysticism but on the needs of man and realities of his nature. Radhakrishnan asserts that it is the spirit in man which is responsible for all achievements which we have in the world. The philosophical interpretation of the process of creativity and the current awareness about the importance of creativity should motivate some research.

1.2 Definitions of Creativity

Even though this construct of "creativity" enjoys a crucial position in the lives of the individual, the society and the nation, no universal definition of creativity is available so far. This could be because different thinkers consider it from different perspectives. Bartlett (1958) has described creativity in terms of "adventurous thinking" in which he included several characteristics of creativity as "getting away from the main track, breaking out of the mould, being open to experience and permitting one thing to lead to another." Good and Market's definition (1959) include several factors such as associational and ideational fluency, originality, adaptive and spontaneous flexibility and the ability to make logical evaluation. Rodes (1961) has attempted to condense the definition of creativity in to person, process, press and product. Creativity is defined by Baker (1962) as "bringing about notable changes in things, thoughts, social structures through action, thinking which result in situation not previously known to us." Lehois (1963) defined creativity "as a complex human attribute that is manifested as a cognitive empirical process from which an original product emerges." Yamamoto (1965) has defined creativity as an elephant which blind men have been touching and describing in their own way but agreement about whose meaning and nature is lacking. Keneller (1965) states that creativity through the approaches of person may be considered in terms of physiology, temperament, personal attitudes, habit and values of person who creates. Raychowdhery (1968) has made an attempt to define creativity, after the integration of definitions given by Israch (1946), Drevdahl (1965), Stein (1956, 1957) and Kavolis (1964) as – " the capacity of the individual to develop products or ideas essentially unique, and hence previously unknown both to the producer and to audience; the creation should be definable in a

socio-cultural unit and be accepted as satisfying, useful or tenable by a general consensus of people at some point in time. This general consensus eventually tends to emerges a "historical judgment," (Kavolis 1964).

Torrance (1969) defined creativity as a "process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements and so on; searching for solutions, making guesses or formulating hypotheses and possibly modifying and resting them and finally communicating the results." Passi (1973) defined creativity as "a multidimensional (verbal and non verbal) attribute differentially distributed among people and includes chiefly the factors of solving problems, fluency, flexibility, originality, acquisitiveness and persistency." It may be pointed out at this stage that creative thinking is accepted to be marked by the actions of mind purposefully directed to manipulate the environment with a view to create new ideas and establish novel patterns and relationships. Chauhan (1979), the pioneer researcher in the field of creativity, has summarised the various definitions of creativity and pointed out that "creativity thus emerges as a 'hormic' urge and conation possessed of utilitarian novelty for ever perpetuating "self-uplift". Imagination proceeds with analytical obstructions on paths of synthesis where 'peak' intuitions guide characteristic precipitous and relational expression to solve problems so that realizations of new and adequate challenges may enrich and beautify life. The scientific process of creativity procures natural outlets to the incessant flow and upsurge of the '*alan vital*' of the dynamic latent". Creativity as explained by Psychologists in terms of traits have gradually given way to definitions of creativity in terms of process, press and product.

Creativity and Process

It was Spearman (1930) who thought of creativity as purely a process. For him creative thinking is the process of seeing or creating relationship with both conscious or subconscious processes operating. Spearman emphasise only mental functioning whereas Barchillon has taken a broad based view than Spearman. Barchillon (1965) defined the process clearly of its both functions for the product, which must be unique, otherwise the process can not be creative. Mackinnon (1960) suggests that "creativity is a process which has a time dimension and which involves originality, adaptiveness and

realization." Yamamato (1964) defined creativity as "the process of forming new ideas or hypothesis testing these ideas or hypothesis and communicating the results." This definition necessarily emphasizes the searching and exploring aspects of process. Thus the definition of creativity as a process lays emphasis only in working within the psyche of the creator.

Creativity and Press

Press means the interaction between human beings and their environment. It is the effect of environment that initiates the individual for certain creative activities. Maslow had been the exponent to define creativity on the basis of press. He explained self-actualization, a pattern of personality growth- "creativity involves a fundamental change in personality structure and that this change occurs in the direction of fulfillment. It implies motivated personality growth as sufficient ground for creativeness. Vinacke (1960) has aptly defined creativity "as an integrated harmony between external world of reality and individuals internalize needs." Thus definitions emphasizing press clearly identify "openness to experience" as the main basis.

Creativity and Product

During the third decade of the century, it was thought that the product which the creative individual makes is the real measure. Greater the products, novel the products, they represent creativity. Adler (1927) defined creativity as a compensatory product of the inferiority drive. In the fourth decade, creativity was defined as a product of distinctive drives and unconscious wishes that aspire to become immortal (Sharpe, 1930). The fifth decade psychologists, Wertheimer (1945) defined creativity as "productive thinking". Maslow (1962) has aptly remarked that 'we tend to think of creativity in terms of product."

It seems that no definition is pure and complete to take in to consideration of defining creativity only through product. There is always an overlap of other stands. Rogers (1961) who is supposed to prefer to define and consider creativity from the point of view of product has also taken a basis of 'press' in his definition of creativity.

Creativity being a complex and multidimensional aspect could not fetch a single definition. Each thinker considers its different dimensions. Hence a good number of definitions have been proposed by psychologists since this aspect attracted their attention. Creativity as defined by Western researchers have different meanings but the two things which are common in these meanings of creativity is originality and emphasis on superior cognitive functioning of the individual. To conclude, the term can be explained as a form of directed thinking in which the subject seeks to discover new relationships to achieve new solutions to problems, to invent methods or devices or to produce new artistic objects or forms. It is a basic striving of life to satisfy creative motive and not a new product but an adequate challenge against the accepted old. It remains a many-splendoured phenomenon with uniqueness in approach and in expression of relationships, in solution of problems that are scientific, literary, or artistic. It is practical and independent capacity attempts to co-ordinate ideas, objects and techniques satisfying specific requirements to get to the good.

1.3 Theoretical Conceptualizations of Creativity

Psychoanalytic Approach

Creativity has always been a controversial issue as far as the definition is concerned. While tracing the origin of this concept one could even find the term fantasy appearing in the writings of Freud (1908/1970) which could be thought to be some kind of an analogous reflection of creativity. In Freudian approach the subconscious has been regarded as a source of creativity or fantasy. Fantasy could be defined as wishful thinking. According to Freud (1924/1968) unfulfilled desires or wishes are the source of fantasy and the 'mechanism of bias' (that is a shift of emphasis from one phenomenon to another and substitution of an unacceptable with a harmless one) and 'condensing mechanism' (which is a fusion of several images in to one image), and symbols formation are revealed in any form of fantasy. This approach, however, did not present a clear view about the process of creativity.

Associative or Behavioristic Approach

This approach primarily views creativity as something resulting from the creative process. Creative process involves the deliberate connection of two previously unrelated "matrices of thought" to produce something new (Koestler, 1964, Mednick, 1962). The more the individual has perceived or the more he has collected and longer he has spent recombining its elements, the better is the chance for a greater number and more valuable combination of ideas (Welch, 1960, pp.142). Thus the originality of the response depends upon the number of combinations the individual has experienced and accumulated for use in the cognitive repertoire.

Gestalt Approach

Gestalt psychologists preferred the term creative thinking over creativity as such. According to them it is a problem solving situation in which the thinker grasps the essential features of a problem and their relation to a final solution which is characterized by novelty, unconventionality, persistence, and difficulty in problem formulation (Newell, et al., 1962). Gestaltist were mainly concerned with perceptive, mnemonic, and intellectual phenomena. Wertheimer (1959) emphasized that in course of thinking the person apprehends the peculiarities of the structure and the demands of a problem situation which cause him or her to change the situation towards its improvement. The Gestaltists interpreted the dynamics of creativity as particular cases of the laws of the perceptive field, as a shift from a situation characterized by the presence of structural tension to a situation characterized by a structural harmony. This shift is reflected by the dynamics of psychic field, referred to as the 'pragnanz principle'. Later Gestaltists asserted that the field itself is striving for simplicity and clarity. Thus the process of creativity could be thought of as a self-regulatory process.

Cognitive Approach

Cognitive theorists are mainly concerned with the ways in which individuals gather and organize information from their environment. Therefore, according to cognitive psychologists creativity represents different ways of receiving and tackling

information, and the different styles of combining information in seeking effective solution. Hence the cognitive approach to creativity focused on the extent to which highly creative people are prepared to take risks in their thinking, about their willingness to take in large quantities of the information, and about their ability to change their viewpoints quickly. According to Bruner (1962) individuals try to take in maximum possible information from the environment and every bit of new information is seen not as a unique event, but it is received as an event having connections with past events. This process is known as 'data coding'. People from similar cultural background usually tend to code events in similar ways. But creative thinking requires capacity to make novel and unusual codings and the more unconnectedness the person perceives between the events, the more unusual data combinations he or she makes. This is referred to as width of categorizing. When the relationship between width of categorizing and creativity was empirically tested it was found that highly creative children scored higher on category width test (Wallach & Kogan, 1965). Another variable, which cognitive psychologists consider important for creative thinking, is cognitive styles. The characteristic way in which an individual goes about taking in information from the world is referred to as 'cognitive style' people whose cognitive style involves the least censoring of the information available in the external world are most likely to be creative thinkers (Cropley, cited in Vernon, 1970, pp.122, 123).

Humanistic Approach

This approach takes in to account the importance of a person and the materials, events, people or circumstances (under which the creative product takes the final shape) at the same time. According to Rogers (1954) creativity occurs when three internal psychological conditions are present (a) openness to experiences, (b) an internal locus of evaluation, and (c) the ability to toy with the elements and concepts. These three internal conditions are fostered by the two external conditions i.e., psychological safety and psychological freedom. The motivational propensity behind the creative act, according to Rogers, is the person's tendency to actualize himself, to become his potentialities. Creativeness, according to Maslow (1954), is a problem of creative person rather than of creative products and creative behaviours. It is the transformation

of the character, the fuller development of the whole person or self-actualization. Maslow found all self-actualizing persons to be creative in one sense or the other.

Psychometric Approach

Creativity has been operationally defined in terms of divergent thinking in the most of the empirical studies. Guilford (1956) proposed structure of the intellect model. Based on this model and factor analytic approach Guilford and his colleagues have identified various abilities (i.e., fluency, flexibility, originality, redefinition, and elaboration). These abilities taken together have been labelled as divergent thinking. Several tastes have been developed to measure divergent thinking (Berger & Guilford, 1969; Christensen, Guilford, Merrifield, & Wilson, 1960; Getzels & Jackson, 1962; Gough, 1975; Lawshe & Harris, 1960; Mednick & Mednick, 1967; Torrance, 1974; Wallach & Kogan, 1965). These testes require multitude of responses instead of one single correct answer (as required in intelligence tests). Some of the most recent reviews on measurement of creativity have reviewed these tests in detail (Hocevar, 1981; Treffinger, Renzulli, & Feldhusan, 1971).

Guilford (1959/1970) gave a brief survey of the known primary traits believed to be related to creativity that were found in factor analysis. The survey included both aptitude and non-aptitude traits, among the latter being traits of temperament and of motivation. Secondly he pointed out what seem to be the place of the aptitude for creativity within the general framework of intellect. He also made some predictions concerning undiscovered aptitudes for creative thinking. Thirdly, some relationships of the factors of creativity to evaluations of creativity performance other than those in the aptitude test category were mentioned to indicate that the factors of creativity do have some support from other sources including evaluations of everyday life performances. The aptitude traits included factors like word fluency (ability to produce words each containing a specified letter or combination of letters), associational fluency (production of maximum number of synonyms for a given word in a limited time), expressional fluency (the rapidity of production for phrases or sentences), ideational fluency (production of ideas to fulfil certain requirements in a limited time), spontaneous flexibility (the ability or ideas, with freedom from inertia or from preservation), adaptive flexibility (a type of flexibility of thinking that requires a most

unusual type of solution in situations where the problem on the surface appears to be soluble by conventional methods which don't actually work), originality (unusualness of the responses, also indicated by remoteness of associations or relationship either in sense of time or logic, or responses that could be judged as being clever), redefinition (ability to give up old interpretation of old familiar objects in order to use them or their parts in some new ways), and elaboration (construction of complex ideas or objects on a supply of plain and simple foundation).

It may be noted that Guilford did make an important contribution by attempting a conceptualization of creativity phenomena on sound statistical and methodological foundations. However, it would be apparent that at places, Guilford did not maintain the distinction between thinking process and ability aspects of creativity. Technically ability may be conceptualized as having an identity separate from thinking process.

1.4 Creativity and Cultural Consideration

The term culture has been used to mean various sets of senses viz., people of different countries, different religions, different socio-economic background, with different modes of living and professions, different intellectual aspects of material advancement, values, preferences and different levels of education etc. Some interesting findings have been reported in cross-cultural research using American and Indian subjects. Torrance (1962) study shows that children from highly developed cultures score better on elaboration than children from less developed cultures. The children in India performed disproportionately better on verbal than on figural tests, Indian boys scored higher than girls on verbal tests but not on figural ones. But interestingly, Torrance did not question the application of the phenomena developed in Western cultures in India. He measured Indian students on different cognitive dimensions which are believed in West as the aspects of creativity. As a result, the children from Western countries were not examined and compared with Indian children on the dimensions the Indians value as important measures of creativity. In other words no attempt was taken to explore how Indians define creativity. The Western definition of creativity was assumed to be universal.

Strauss and Strauss (1968) findings were that Americans were more creative than Indians. Singh's (1970) findings were similar to that of Strauss and Strauss. Sharma, K. N. (1972) study on urban- rural differences show that rurals were significantly more creative than their urban counterparts. In a recent studies conducted by Khatena et al (1976) and Khatena and Raina (1977), the creative perceptions of American, Hungarian and Indian adults, and American and Indian adolescents respectively as measured by Raina were compared. Results showed that Americans obtained higher means than Hungarian on environmental sensitivity, self-strength and intellectuality, while Hungarian obtained higher means than Americans on initiative, individuality and artistry. Hence one cannot deny the impact of culture on creativity in whatever way it is defined. Mari (1976) has beautifully evolved some assumptions concerning creativity in its societal and cultural contexts and has very ably justified the following ideas. Society provides a framework for channelising creativity, it sets up values and criteria by which such products are judged and opportunities for creativity are not equally distributed with in a society etc. Mari (1976) has further emphasised the oriental philosophical concept of creativity as an 'extra' mental or supra mental activity. In traditional societies, creativity is not mere living on basic economic and social level but for achieving some high order. In developing societies poor people (fighting for basic needs) are still able to be creative contradicting the concept of Maslow's self-actualization being on the top of a hierarchical order of needs where self-actualisation is achievable after basic needs have been fulfilled. In a society where people are striving for basic amenities (need fulfillment) self-actualisation can coexist as an 'extra' or supra creativity. In such societies economic improvement (on the contrary) has a by-product that may hinder the individual as intellectual and emotional growth because the 'wants' are unrealistically greater than the 'needs'. The orientalist (against the western pragmatic) may lament the fashion to identify the personal development and affluent living with having more at the cost of developing extra/ supra mental ability for creative living and humanistic upliftment. Creative responses in poverty condition, therefore opens up new challenges. A villager tapping a new source of water or tuning in a new song may be equally creative to a Ford type entrepreneur in Dayton U.S.A. this ability of the poor to achieve self-actualisation has been discussed by many thinkers. Indian thinker Tagore (1962) pointed out the source of all creativity with his concept of 'surplus in man'. This 'surplus in man' as theorised by Tagore may be on

one end of spectrum, located near the spectrum location of Kundalini as in the Yoga system, while the other end of spectrum may represent 'libido of Freud and sexual relaxation cum meditation of Rajneesh. To realise this creative potential lying dormant like a serpent, the Kundalini, at the base of the spinal cord (according to Hatha yoga), we must attack on all the fronts including the front of psychology education, meditation and psychotherapy—as pleaded by Datta (1976). Reverting to Tagore's concept of 'surplus in man' every individual has a surplus of mental and vital energy which is for in excess of biological need. In the ordinary person as well as in the genius, this surplus, is constantly seeking expression and realisation and it impels him for creative life, transcending limitations. Tagore conceived this creative potential in all human activity- we are dreamers of dream, the music makers, makers of songs with words and tunes as also with lines, colours, stones and metals. For the release of this 'surplus in man' Peavy (1979) recommends overcoming anti- creative phenomenon and lists the following blocks- internal prejudices, psychopathology, intolerance of playfulness in self and others, worries, anxiety and dialogues (real or imagined) with foes. Some of the procreative phenomena pleaded by him include—abilities to let capacities flow of themselves without effort, improvised dance, drama and self-expression with material. This makes it clear that different culture talk about different components of self.

1.5 Folk or popular notion of creativity

When people engage in activities involving creativity, especially the evaluation of creativity, they rarely base their judgements and actions on formal theories of creativity. Although formal, or explicit, theories of creativity are necessary and helpful guides for research and enhancement efforts explicit theories do little to explain how lay people conceptualise creativity as they proceed through their daily activities. The acknowledgement of this shortcoming of explicit theories has led to an increase in the number of studies of implicit, everyday, or folk theories of various psychological constructs (Neisser, 1979;Schrempp, 1996; Strenberg, 1987). Implicit theories of intelligence have received the most attention (e.g. Ablard & Mills, 1996, Lynott & Woolfolk, 1994; Stipek & Gralinski, 1996), but considerable effort has also been expended in the study of implicit theories of giftedness (Sternberg, 1993; Sternberg & Zhang, 1995; Zhang & Sternberg, 1998) and learning disabilities (Swanson & Chriatie,

1994), among other areas. Implicit theories of creativity have received only a small to moderate amount of attention.

Runco (1999) notes that "implicit theories allow us to judge creative behaviour even if we can not define creativity" (p.28). Because implicit theories are easier to share than formal definitions of the construct, knowledge of implicit creativity theories facilitates both planning and evaluations of efforts to foster creativity (Plucker & Renzulli, 1999; Sternberg, 1987, 1993). For example, Plucker's (2000) study of implicit theories of invention provides that young adolescents have simplistic conceptions of invention, conceptions that do not appear to be affected by traditional approaches to invention education. He noted that problem-based learning appears to influence the complexity of student implicit theories and should be considered as a vehicle for invention education.

In addition, the study of implicit theories has already yielded considerable benefits in three areas of creativity research and assessment: Straightforward analyses of implicit theories, socially valid techniques for instrument design, and improved strategies for evaluating creative products (Plucker & Runco, 1998). Researchers have found that adjectives such as adventurous, artistic, and curious are generally included in adults' implicit theories of children's creativity (Runco, Johnson & Bear, 1993); teachers generally believe that creativity can be enhanced and involves more than divergent thinking (Fryer & Collings, 1991); teachers and parents hold similar implicit definitions of creativity, although teachers emphasise social characteristics (e.g. friendly, easygoing) to a greater extent than parents (Runco et.al., 1993); and college students' implicit definitions of creativity, intelligence, and wisdom are quite different, with each set of definitions similar- but not identical- to the corresponding set of explicit definitions (Sternberg, 1985, 1990).

Implicit creativity theories may also facilitate cross cultural research on creativity, since implicit theories tend to reflect the cultural influences of a society upon its members (Ruzgis & Grigorenko, 1994). However, investigations of the implicit creativity theories of people in non-western cultures are uncommon. And most existing studies focus on implicit theories of specific Chinese cultural groups. Chan and Chan

(1999) investigated teachers' perceptions of students' creativity in Hong Kong and concluded that aspects of creativity associated with nonconformity were prevalent among the implicit theories. Given the accent on social responsibility with in Chinese cultures, this was seen as a cause for concern. Similarly, a review of creativity with in Sudanese cultures identified the traditional cultural value of conformity as a barrier to applying Western conceptions of creativity to enhancement efforts in developing countries (Khaleefa, Erdos & Ashria, 1996). Chan and Chan (1999) also noted that the Chinese teachers' implicit theories of creativity contained many characteristics related to intelligence, a result that stands in contrast to Sternberg's (1985) research with Americans. Further cross-cultural study of implicit theories will facilitate the identification of important cultural differences in the way people conceptualize and assess creativity. This potential benefit is illustrated in the studies of implicit intelligence theories, which provide evidence that African and Asian populations may accent the importance of social responsibility and competence to a greater degree than populations in Western countries (e.g., Azuma & Kashiwagi, 1987; Irvine, 1970; Ruzgis & Grigorenko, 1994). As a result, researchers have questioned the use of traditional, Western intelligence tests in Asian countries, given that these tests do not generally provide insight in to the test taker's social competence or sense of social responsibility.

Greater knowledge of peoples' implicit creativity theories will inform theory, research, and practice related to creativity. Cross-cultural studies of these theories have additional value in helping identify similarities and differences in the application of creativity in different contexts. Previous research suggests that Chinese and Sudanese theories of creativity conceptualize creativity as being potentially negative in the eyes of teachers and other practitioners due to social responsibility. However, implicit theories of individuals from other Asian countries- including India, have rarely been the subject of intensive study. Given the incredible diversity in Asian cultures, this lack of coverage is a critical weakness in the research literature.

In some cases, western views of psychological constructs (e.g., Intelligence, Creativity, and Wisdom) are different from views in other cultures (Rudowicz & Hui, 1997; Sternberg & Kaufman. 1998). Implicit theories in different cultures can benefit

out understanding of universal trends and culture specific variations in peoples' perceptions, concepts, and behaviours. Rudowicz and Hui (1997) note that even findings of similarities across cultural context inform theories of creativity, lead to synthesis of theories across cultures.

Thus the purpose of this study to is investigate the implicit creativity theories of Indian graduate and postgraduate students in an effort to understand the notional understanding of creativity. In India most of the creativity researches have been done on the Western model with slight modification of the tests used. The tests and instruments developed by Indian researchers to study creativity are based on the Western model. The dominant Western model is based on reductionist and positivistic paradigm, which gives greater emphasis to individuality and less consideration to cultural and social aspects. The reflection of this paradigm is seen in the kind of creativity researches done in India. Though these researches produced significant results but their validity is still questionable in the Indian context (Tanwan, 1977). Therefore there is a need felt by the researcher to explore the phenomena of creativity within the cultural domain of India, and develop valid and reliable measures to assess and define creativity, which holds substance and meaning to their people and researchers too.

CHAPTER-2

LITERATURE REVIEW

Although creative thinking is considered to be the highest of mental functions and creative production, the peak of human achievement. It is peculiar that only within the past decade creativity has become more of a central concern in psychological research. In the year 1941 no mention was made of the concept; in 1950 "creative" was added to the higher mental processes but without further elaboration; in 1960 creative thinking appeared in a brief subsection of the article on higher mental processes.

An important feature of research literature in the field of education and psychology during the past 25 years has been a dramatic rise in the number of titles devoted to creativity. Guilford (1950), during his famous 1950 presidential address to the American Psychological Association reported that up to that time, out of 1,21,00 topics listed in the Psychological abstracts, only 186 deals with the subjects of creativity. But 17 years after Guilford's address, Parnes and Brunelle (1967) reported about 1250 bibliographic entries to have appeared only in the proceeding 18 months. Stievaster (1971) published a bibliography of books on creativity and problem solving covering the publications from 1950 to 1970 which included nearly 1300 titles.

The present researcher seeks to present here the studies which have proved to be of significant value in providing an understanding of the creative potential. In this chapter, the review of literature has been organised in the following manner:

- Creativity and personality
- Creativity and intelligence
- Creativity as related to demographic variables
- Studies on implicit creativity

2.1 Creativity and Personality

Simpson (1922) who believed creativity 'as a person', emphasised the cognitive structure of creativity. The contention of Simpson's description indicates that mental abilities involve in searching, combining and synthesising the components of creativity. The personality structure of a person also plays an important role in the invention, imagination or production of creative work.

Cognitive- conative processes interact with each other and play an important role in creative process. Cattell and others have confirmed that personality pattern have some influence on the creative thinking. The part played by personality in creativity has been recognised by numerous research scholars. The first investigation on the problem of creativity personality relationship is done by Galton (1869), creative process always focus a strange approach from society. Compared to other species, man depends more on psychosocial factors.

Raina, (1968) compared high creative and low creative students on the measures of cognition, personality and socio-economic status using Torrance test and discovered that high creative students exhibited greater achievement, autonomy, dominance, change and endurance than the low creative students but the latter were high in heterosexuality. The high creative males showed greater achievement, autonomy, dominance, change, aggression and endurance than the low creative males. The high creative females were significantly higher than the low creative females on achievement, autonomy, dominance, change and endurance but latter were characterised by defence order, affiliation, succurance and heterosexuality traits. Thus the low creative group have evidence of significantly greater anxiety than the high creative group. Significant differences were found between the high and low creatives on socio-economic status.

Ahmed (1969) concluded from her study on the personality differences among high and low creative girls, that the high creatives were more dominant that the low creatives.

In both the studies it was found that high creative students differed in personality orientation from the low creative students. Here it can be argued that the method used in the studies to identify high and low creative persons, was a valid method in the Indian context as both the researchers have used the modified version of the Western tests to identify these differences.

Goyal, (1971) studied the personality traits of creative children at the middle school stage of Patiala (Punjab) using his own valid and reliable test of creativity developed on the lines of Torrance and discovered that the creative pupils possessed a

higher level of energy, they rejected suppression for control of impulses, they were more of introverts and more independent in both thought and action, had open minds, could tolerate ambiguity and entertained opposing values.

Kumar (1973) studied the creativity in relation to personality values and achievement motivation and concluded that high creatives are more introverted than the low creatives. They possess a significantly higher degree of theoretical value and are more achievement motivated than the low creative individuals.

Paramesh, (1971) using Wallach and Kogan test for measuring creativity, concluded that creative individuals are neither significantly more nor less introverted than the low creative individuals. The high creatives are significantly high in ego strength than the low creative individuals. The high creative individuals differed significantly from the low creatives on theoretical and aesthetic values.

Kumar (1981) in his study-Personality identification of high and low creatives at age 13 or older; revealed that the high creative children were less anxious than their counter parts. The study further revealed that the high creative children were significantly more extroverted than the low creatives. The study also highlights the fact that creatives can be identified at 13 years or older on the basis of their personality traits of extroversion/introversion and anxiety.

Studying the personality differences of groups defined on the basis of different criteria of creativity, confirmed that significant difference existed between persons chosen on the basis of different criteria of creativity. Creative actualizers were significantly more introversive in personal orientation than the high creative potential group on the other hand, the low creative potential group was just average on the extroversion-introversion dimension. In addition, both the creative actualizers and high creative potential persons proved to be more self actualized than the low creative potential group. The groups were not significantly different for the anxiety construct. The positive relationship between creativity and self actualization was also confirmed.

The contradictory findings by the various researchers regarding the creative individuals could be attributed to the method used and the way categorisation has been done by the researchers to identify creative traits of an individual. Most of the researchers have used the modified versions of Westerns tests without being testing the construct validity of the instrument in the Indian context. Their reductionist approach and Western way of categorisation has resulted in the differential findings

Gopal (1975) conducted a study of certain differentiating personality variables of creative and non-creative science and engineering students and found that the creative science students were more reserved, emotionally stable, assertive, sober, expedient, venturesome, suspicious, imaginative, shrewd and the non-creative science students were more outgoing, affected by feelings, humble, happy-go-lucky, conscientious, shy, trusting, practical, forthright, conservative, group dependent and tense.

The creative engineering students in comparison to their less creative peers were found to be more reserved, emotionally stable, assertive, sober, expedient, venturesome, tough-minded, suspicious, imaginative, shrewd, experimenting and self-sufficient where as the non-creative engineering students were more outgoing, affected by feelings, humble, happy-go-lucky, conscientious, trusting, practical, forthright, conservative and group dependent. The creative science students were found to be more reserved, assertive, expedient, conservative, group dependent and indisciplined while the creative engineering. students were found to be more outgoing, humble, conscientious, experimenting, self sufficient and controlled or disciplined. While the non-creative science students were found to be more reserved, assertive, expedient, tough minded, imaginative, shrewd, conservative and indisciplined than the non-creative engineering students who were more outgoing, humble, conscientious, tender-minded, practical, forthright, experimenting and controlled.

Raychaudhuri (1963) discovered from his studies that the creative musicians are more distinctly marked by his emotional and temperamental characteristics than by other aspects of his personality. Creative musicians have a mature ego function which does not allow to express openly hostile, explosive, aggressive and sexually charged

impulses. Their overall picture is indicative of an appropriate inner control necessary for directing impulse expression.

Munsterberg and Mussen (1953) gathered personality data from a group of Art and Non-Art students to verify some of the psychoanalytic hypotheses of motivation for creativity. It revealed that "more artists than non-artist have quiet, introverted personalities and suffer from intense guilt feelings. In general, they are less likely to have overt aggressive tendencies." The art students also exhibited a "need of self-expression as the acceptance of their work is more important to them than material gain personal success or anything else.

Eiduson (1957), in her cogent projective personality studies of creative persons, investigated the validity of a set of motivational variables of creativity that appeared in psychological literature. She reported that, as compared to the non-artists used parental ideals to set own goals had strong exhibitionistic needs and desires for recognition that are tied in with achievement, expressed strong ego-involvement and conflict in work, had curiosity as a prominent determinant of work, valued work primarily as permitting expression of inner personality and had a need to integrate internal and external experiences in a comprehensive way.

The various groups of creative artists of Eiduson's study (1957) were mostly found to be lonely and isolated as children, dissociated from intimate family ties. Their drives toward their respective arts seemed to have sprung from self-oriented needs. Early manifestations of their talents have generally resulted in various social relationships which ultimately led to many gratifying experiences in nature of familial and social recognition. The early life of research scientists, Eiduson (1962) reported, was also characterised by periods of isolation either due to presence of social, psychological circumstances or stimulated by intrapsychic needs, which provided them a refuge to their personal resources and during this period they explored, experimented with their abilities and extended them. This retreat, as a matter of fact, inhibited their juvenile interest in games, sports and athletics. For the personality of creative scientists, Eiduson circumscribed these main areas: the deep-seated investment in intellectual things; the expression of a wide gamut of emotional response within the intellectual

(and particularly work) framework; the independence in emotional behaviour; sensitivity both to himself and to the motive of others, and to sensory and even sensual stimuli. The men of sciences were also found to be non-conformist, off-the-track and original. Sensitive to their internal needs, wishes and desires, capable of conveying experiences so that another's emotional response was aroused and expressing strong ego-involvement and conflict in work.

Golann (1962), on the basis of objective data, has established the existence of a so called "creativity motive" which underlies "a tendency for individuals to differ in the degree to which they attempt to experience their fullest perceptual, cognitive and expressive potentials in their relation with their environment." This study not only showed that persons with high creativity motive consistently preferred situation which permit unconventional and unique ways of dealing with them, but also chose activities permitting more self-expression and utilisation of creative potentialities, as compared to low creativity motive subjects with preference for obvious, usual and structured performances.

Roe (1951) analysed the life history of a group of eminent scientists to get an access to their personality development and interaction process. She found a great variety of features some of which were lack of close affectional ties, self-discipline, passive emotional adaptations and presence of retarded social and sexual development. More than half of the scientists characteristically, reacted with anger and rebellion to the over-protective and rigid pattern of child-rearing of their parents. In the life history data of eminent American composers of various composers of 'serious' music, Nash (1954, 1957) identified definite indications of psychosexual "delay" or malfunction. Besides being egocentric and individualistic in their personality orientation, the musicians' interaction with their parents were characterised by conflict with, and distance from father and solidarity and intimacy with mother.

It is clear from the above description that in the genesis of creativity, 'the person', itself has an important place. There some questions which reflect the importance of personality or 'person' in creative situations. Why some persons perform creative acts in some situations and not in others? Or why some persons make variety

of responses under similar situations? Several personality theories are available which explain such variations in behaviour under creative situations. Personality is the dynamic organization of an individual and environment. An individual can not fulfil all desires whether their source of motivation is biological, mental or social. Both external and internal causes are responsible for the fulfilment of human's conscious and unconscious desires. This situation ultimately creates a tenseful situation which may lead to creative thinking. Creation may result as various of performance or the embalancement in the personality. Thus it can be concluded that creativity is related to personality structure of an individual. In other words the intensity of creative thinking varies from person to person. This variation may be depending upon the variations of individuals' cognitive, conative and affective aspect of the personality.

Even though these studies appear to have assumed an implicit relationship between creativity and personality, but none give a clear understanding of how in a given culture, these factors define a creative person holistically. In other words these notions fail to validate socially the manner in which the term creativity has been used in these studies. This is probably because in most of the studies a reductionist and positivistic paradigm have been used to measure creativity.

2.2 Creativity and Intelligence

The relationship between intelligence and creativity has been a wide and complex problem for the psychologists. This gives rise to the question- are intelligence and creativity two distinct abilities or intelligence encompasses creativity within its fields as thought by early psychologists? In recent years many attempts have been made to find out the relationship between creativity and intelligence.

The first systematic study that was especially aimed at laying down a clear cut distinction between intelligence and creativity was done by Getzels and Jackson (1962). Their study reveals that creativity and intelligence are separate modes of thinking. In Gatzels and Jackson's study the average correlation between creativity and intelligence was found to be .26. On the basis of different studies, the correlation between creativity and intelligence observed ranged nearly from .20 to .40.

Cicirelli (1964) studied a large group of school children using Torrance measure of creativity and California Mental Maturity Test, found the correlation between creativity and intelligence were of the order of nearly 0.33.

Wallach and Kogan (1965) study may be credited to have demonstrated clearly the distinction between the domains of creativity and intelligence. They constructed their own measures and found these to have an average inter-correlation of 0.40, but average correlation between creativity and intelligence was found to be only 0.10. Thus their results confirm their contention that a dimension which may be termed as creativity exists almost independent of another dimension called intelligence.

Anastasy and Shaefer (1971) in their study found that there was significant inter-correlation between IQ and creativity. They indicated that intelligence and creativity are broad, loosely- defined concepts which describe a multiplicity of interrelated traits.

Zarengar (1981) examined the dimensionality of the construct of original thinking by using measures designed to control both for the occurrence of confounding of the construct of originality by that of fluency and for task ambiguity. Subjects were 315 gifted children in the fourth, fifth and sixth grades. The results indicated that original thinking was conceptually distinct from general intelligence.

Serena Wade (1968) worked on differences between intelligence and creativity: some speculation on the role of environment. It was found out that although there is common ground between intelligence and creativity which ought not to be ignored in further creativity research, there is also some reason to suspect that creativity is fostered by a particular type of environment which has little effect on intelligence. The correlation between intelligence and creativity can be easily attributed to the common factors involved; the remaining variance appears to depend on the psychological safety and freedom (to use Roget's concepts) in which the child is encouraged to present himself as an independent individual. While the data are not definitive, they do provide some groundwork for further exploration in to the nature-nurture question involving

cognitive abilities. They cast some doubt on the assumption that any intellectual development is totally independent of psychological support in the home.

Passi (1973) in his study tried to establish a relationship between creativity as measured through Passi test of creativity and intelligence which was determined on the student's performance on Raven's progressive Matrices and Jalota's group test of mental abilities. The study revealed a positive and significant relationship between these two variables among higher secondary school students.

Sharma (1972) explored in to the relationship between creativity and intelligence among tenth class students. Jalota's group test of mental abilities stood as a measure of intelligence and the scores in the creativity were obtained employing the creativity test by Chauhan and Sharma. The results pointed out a positive and significant relationship between intelligence and creativity. Students scoring higher on the test of intelligence were also higher scorer on creativity. But rise in the intelligence at higher levels was not very much helpful to cause a significant rise in the creativity scores.

Paramesh (1973) studied 155 high school students of Madras city and found that there was no relationship between creativity and academic achievement as assessed by marks. Thus, this study has corroborated the contention of some investigators that the really creative will fail in the college and only less creative pupil will succeed there.

Mehdi (1974) discussed the nature of divergent thinking and convergent thinking in relation to intelligence and school achievement. He found out that in real life situations those individuals who make creative contribution to society are not necessarily those who are high in intelligence.

Mehdi (1974) tried to find out the relationship between creativity and intelligence. Mehdi's test of creativity was administered to the VII and VIII class students and scores of these students on Mohsin's group test of general intelligence and Raven's Progressive Matrices stood as a measurement of verbal and nonverbal intelligence. Te results indicated a slight and negative relationship between creativity

and intelligence in the urban sample, while it was positive and significant in the case of rural sample.

Rawat and Agrawal (1977) administered their standardised creativity test to VIII and IX class students to find out the relationship between creativity and intelligence. The scores on which were obtained through the Jalota's group test of mental abilities. The results showed that high achievers on intelligence were not always high on creativity. Though intelligence came out as a factor accounting for the small variation in student's creative achievement.

Dutta (1976) used a verbal stimulus, "The dream I can never forget" as an indicator of creativity among class X students. Jenkin's nonverbal group test of intelligence standardised by C.I.E. was used as a measurement of intelligence. The results pointed out a curvilinear positive and somewhat substantial relationship between creativity and intelligence. It was observed that to a certain extent creativity and intelligence go together, but then take the different directions. As such, highly creative subjects need not necessarily be highly intelligent.

Jana, Thomas, Yawkey (1984) in their study: Imaginary play companions; contributions of creative and intellectual abilities of young children found that development of sensitivity, elaboration and originality are creative aspects linked with imaginary companions. These have the potential for increasing creative and intellectual thought in both school and home settings.

Pestonjee and Usmani (1982) in their study: creativity in relation to alienation ego strength and intelligence; the result revealed that intelligence and ego strength are the important determinants of creativity. it also said that there is weak and negative relationship between alienation and creativity.

Khire (1976) conducted a study on 9-17 year school students. The results show that (a) there was significant correlation between school grades and 'Advance progression Matrices' scores, (b) correlation between APM scores and creativity over a

wider range of intelligence were significant but low and (c) the effect of social status was positive.

Gakhar (1975) explored the intellectual and personality correlates of creativity. The result show that both creativity and intelligence are two distinguishable modes of the same intellectual functioning yet at the same time they are not distinctly independent of each other. The two criterion groups are found to be significantly differing on personality traits of self acceptance and self sufficiency. The measure of creativity, intelligence and personality cluster together in specific combinations yielding though in a restricted manner.

Singh (1977) studied creativity as related to intelligence, achievement and security-insecurity. 14-16 years old high school students who were eighty in number were the samples. Result revealed significant correlation between creativity and intelligence, creativity and achievement, and intelligence and achievement.

Patel and Parikh (1984) the result of the study revealed that academic achievement varied directly as a function of the degree of talent in both boys and girls and no significant relationship was found with identification pattern and academic achievement.

From the above researches one can not conclude the exact nature and extent of relationship existing between creativity and intelligence. It will be apt to conclude that the exact nature of relationship between intelligence and creativity however depends upon the types of tests used and the nature of the sample studied. It is often found that creativity of certain kind is highly related to intelligence while creativity in certain areas are not so highly related to intelligence and also that some degree of intelligence is essential for cultural, scientific, technological or artistic innovations. It is rather apt to think of creativity and intelligence as two different styles of thought, as two complementary aspects of human intellectual ability broadly conceived.

2.3 Creativity as related to demographic variables

One of the most pervasive findings in creativity research has been the phenomena of demographic variables. The demographic variables show markedly intense signs of hostility towards creativity. The empirical approaches and factor analytical investigations paved way for researchers to consider creativity on the ground of demographic variables id est., the age, sex, socio-economic status, family background, sibling relations, parental education etc. play a dynamic role in the development of creative potential in an individual.

Healy (1984) suggested that the level of development is perhaps a more significant determinant of creative response styles than socio-economic status. Furthermore, problem solving training, regardless of the specific approach, may provide the necessary experience to strengthen existing preferences for creative expression which are developmentally influenced. The results demonstrate that culturally deprived group is enable to compete with non-deprived children in creativity. Lacking enriching experiences in their home environment (little attention given to art, a dearth of aesthetic stimuli, a relatively low language level), these children could not produce large number of ideas within a prescribed time (fluency) or detach themselves from an idea, once they had hit on it. The main effect of both nutritional status and sex were statistically significant. It revealed statistically significant difference in creativity between the normal and each of the three malnourished groups and the differences favoured the normal. The effect of age on creativity was positive for boys and negative for girls.

In another study by Singh and Farial (1985), the results showed a significant superiority of first born student over the last born in fluency, in flexibility and in originality components of verbal creativity.

Rechardson (1986) showed a significant difference in favour of the females beyond the .001 level. There were a large number of significant correlations relating to females when the relationship between sex of subject and performance on the creativity measures was examined.

Torrance (1969) tried to find out whether there was any difference concerning creativity scores in case of girls and boys. It was found that sex difference was a significant feature while finding creativity and scores of boys and girls were different.

Christie in 1970 worked on environmental factors in creativity. They tried to find out whether school environment, parental control patterns, the need to achieve, parental education and the home background of the person has any effect on one's creativity, they found out that there was. They said that the nurturing environment both at home and in school is one which gives a free reign and the ready response to the explorations of the child.

Pareek (1966) investigated the relationship between creativity and personality adjustment problems; of randomly selected sixty boys and sixty girls from schools in Sardarshar (India). The results clearly indicated that students who had scored more on creative thinking had lesser number of personality adjustment problems.

Hota (1986) in his study of school achievement and personality: a TAT study, found a significant positive relationship between school achievement and conflict level, self assertiveness and future outcomes of students. A high degree of positive relationship was found between school achievement and self assertiveness in urban area children and aggressiveness and school achievement relationship in tribal area children. Boys and girls do differ in their conflict and school achievement relationship. Besides these high achievers and low achievers do differ significantly in their personality traits except 'affiliation' trait.

Sharma, (1972) in his study on urban-rural differences on creativity has shown that the rurals were significantly more creative than their urban counterparts, though the differences were not clearly observable in smaller sample but only a trend was observable.

Singh (1977) study the effect of group structure on creative functioning and found that in the case of unstructured groups the one with both low creative member performed better than the ones whose both the members were high creatives. This

indicates that lack of structure in the group is more detrimental to performance of low creatives.

Geeta and Shrivastava (1983) in their study found that boys are more creative than girls and birth order does not have any bearing on creative ability of children.

Badrinath and Satyanarayan (1978) studied a few correlates such as age, sex, religion, birth order, mother tongue and scholastic achievement. Samples were ninth standard students of Kendriya Vidyalaya (114 students) of Bangalore. Scholastic achievement was found to be not influencing the creative thinking as there was no significant difference in conclusion.

Jarial and Sharma (1980) in their study administered the TTCT (verbal as well as figural) to determine the trend of development of verbal and nonverbal creativity of male and female subjects from 12 to 15 years of age. They found that in case of nonverbal creativity, mean score increased up to 14 years of age and decreased at the age of 15 years. In the case of verbal creativity, the mean score for males decreased up to 14 years, with sudden increase at the age of 15 years, whereas, in case of females there was a consistent decrease in the mean verbal creativity scores of the subjects from 12 to 15 years of age.

Lehaman (1953) studied the relationship between creativity and age. He studies persons in different fields and got expert ratings of their contributions, income, positional influence and leadership. The results revealed that the chemists contribute most between 26 to 30 years of age; mathematicians, movie actors and musicians contribute most between 30 to 40 years of age; authors contribute most under 45 years of age; philosophers contribute most between 35 to 39 years of age; executives who earn utmost popularity contribute most between 60 to 64 years of age; and political and civil leaders contribute most between 50 to 55 years of age. The investigator found that creativity rises in thirties and then declines slowly. He also found that the quality of production occurs at an earlier age and as the age increases, the quality is reduced and the rate of its downfall is also high at that age. Lehman argues that it is not the age but the other factors, that account for reduction to production, such as, decline in physical

power, sensory and motor capacities, sessions illness or bodily infirmities, glandular changes, marital and sexual problems, death of loved ones, pre-occupation with practical demands of life, increasing responsibilities, desiring prestige than creativity, contentment due to early creations, apathy due to non-recognition, negative transfer, decreased motivation. He argued that these factors, not all, but some or one may come in way of one's creativity with increase in age, causing reduction in creation.

Singh (1970) carried out a cross-cultural study with Indian and American children. The investigator hypothesised that the advantaged (high SES) subjects will excel the disadvantaged on creativity tasks (low SES), regardless of the culture. The results showed that the advantaged subjects scored significantly higher than the disadvantaged in nonverbal flexibility, nonverbal originality and verbal originality aspects of creativity, whereas, in verbal fluency, verbal elaboration, verbal redefinition, nonverbal redefinition and nonverbal sensitivity to problem aspects of creativity, the disadvantaged subjects excelled the advantaged subjects. No significant differences were found between the advantaged and disadvantaged in a few aspects of creativity, namely, verbal sensitivity to problems, nonverbal fluency and nonverbal elaboration. It can be concluded from this study that (a) disadvantaged children, regardless of culture do not necessarily score low on verbal part of creativity test; and (b) with the increase in the SES, creative thinking abilities such as , flexibility and originality excel at the cost of fluency, redefinition, elaboration and sensitivity to problems. To conclude one can not deny in saying that the demographic variables play a very effective role in developing the creative potential of an individual.

From the preceding section, it is evident that studies done in the area of personality, intelligence and background variables related to creativity are inconclusive in nature. Most of the studies have neglected the cultural aspects of creativity. No study provides a clear understanding of how in a given culture, these factors define a creative individual holistically. For them man is a face less man. In other words these notions fail to validate the social and cultural notions of creativity. This shortcoming led to another tradition of research in which cultural and social factors play a sublime importance in defining a creative individual and is also closer to the construct.

2.4 Studies on Implicit creativity

Most research on creativity and intelligence has been devoted to the construction and testing of what might be referred to as explicit theories of creativity and intelligence. Explicit theories are construction of psychologists or other scientists that are based or al least tested on data collected from people performing tasks presumed to measure intelligent and creative functioning. A less sizeable research effort has been devoted to the discovery of what might be referred to as implicit theories of creativity and intelligence. Implicit theories are constructions of people that reside in the minds of these individuals. Such theories need to be discovered rather than invented because they already exist, in some form, in people's heads. Discovering such theories can be useful in helping to formulate the common- cultural views that dominate thinking about a given psychological construct, whether the culture be of one people, in general, or of psychologists, in particular.

Mackinnon (1964) studied the architects of three levels of estimated creativity rate both themselves and an ideal self on the Gough (1961) Adjective Check List. The results suggested those attributes most characteristic of highly creative and less creative individuals. Adjective that best distinguished the top from bottom groups of architects (high scores for more creative architects) were: inventive, determined, individualistic, enthusiastic, industrious, independent, artistic, progressive, and appreciative. Adjective that best distinguished the bottom from the top group (higher scores for less creative architects) were: responsible, sincere, reliable, dependable, clear- thinking, tolerant, understanding, peaceable, good- natured, moderate, steady, practical, and logical.

Barron (1968) used Q- sort technique to distinguish attributes of creative writers, and obtained five items that were particularly distinctive of the highly creative writers: appears to have a high degree of intellectual capacity, genuinely values intellectual and cognitive matters, values own independence and autonomy, is verbally fluent- can express ideas well, enjoys aesthetic impressions- is aesthetically reactive.

Dweck and Bempechat (1983) in their study on teachers implicit theories of intelligence and their educational goals; identified two implicit theories of intelligence:

(a) an incremental perspective that sees intelligence as a malleable, dynamic quality; and (b) an entity orientation that views intelligence as fixed and stable. They concluded that these theories of intelligence may guide teaching practices such as selecting tasks, providing feedback, and setting goals. Teachers who hold an entity view of intelligence are likely to emphasise performance goals for "looking smart" while teachers favouring the incremental perspective stress learning or "becoming smart".

Sternberg (1985) in his study of implicit theories of intelligence, creativity and wisdom revealed that conceptions of creativity overlap with those of intelligence, but there is much less emphasis on implicit theories of creativity on analytical abilities, whether they be directed towards abstract problems or towards verbal materials. He also found that creative individuals has a certain freedom of spirit and unwillingness to be bound by the unwritten canons of society, characteristics not necessarily found in the highly intelligent individual. Implicit theories of creativity encompass a dimension of aesthetic taste and imagination that is absent in implicit theories of intelligence, and also encompass aspects of inquisitiveness and intuitiveness that do not seem to enter in to the implicit theories of intelligence.

Lynott and Woolfolk (1994) studied the implicit theories of intelligence and educational goals of 84 teachers in New Jersey. The findings revealed only two dimensions of intelligence: conceptual thinking and practical knowledge. Teachers' beliefs about these dimensions of intelligence were related to their goals for students. It was also found that higher the teachers' ratings of a particular dimensions of intelligence, the more they valued educational goals consistent with that dimension of intelligence.

Rudowicz and Yue (2000) studied the aspects of creativity concepts across different Chinese populations. A Likert style questionnaire consisting of 60 adjectives was administered to 451 undergraduates from Beijing, Guangzhou, Taipei and Hong Kong. The results show that: (a) the core characteristics of creativity identical in all the samples are : originality, innovativeness, thinking, and observational skills, flexibility, willingness to try, self confidence, and imagination; (b) the Taipei sample, unlike the other three samples, does not associate 'wisdom', assertiveness, and individualism with creativity; (c) in all Chinese population the three factors labelled innovative, dynamic, and intellectual were distinguishable in the concept of creativity; (d) artistic and

humorous were missing in the Chinese perception of creativity; (e) creativity characteristics received relatively low ratings on the desirability scale .

Woong Lim and Plucker (2001) in their study of implicit creativity with Korean students found that Korean students' conceptions of creativity are similar to the western conceptions of creativity, although Koreans may emphasise negative behaviours and personality characteristics (e.g., deviance) to a greater degree. When asked to use their implicit theories to evaluate the creativity of hypothetical profiles, Korean adults strongly emphasise specific cognitive, personality, and motivational aspects of creativity over noncognitive aspects (e.g., perseverance, independence).

Plucker (2000) in his study of implicit theories of invention found that young adolescents have simplistic conceptions of invention, conceptions that do not appear to be affected by traditional approaches to invention education. He noted that problem based learning appears to influence the complexity of student implicit theories and should be considered as a vehicle for invention education.

Yue and Rudowicz (2002) studied the 489 undergraduates in Beijing, Guangzhou, Hong Kong and Taipei about their nomination of most creative Chinese people in history and in modern times. Results revealed that politicians were nominated by all four samples as being the most creative individuals in the past and at present. Scientists and inventors ranked second in position. Taken together, they occupy over 90 percent of the total number of nominations. Artists, musicians and businessmen are rarely nominated. More than half of the reasons given for nominating these people are not directly related to creativity. This finding is attributed to a strong utilitarian view of creativity that lies in Chinese young people's perception of creativity.

The review of the literature in the area of implicit creativity leads us to the conclusion that in most of the cases the findings have been similar to the Western notion of creativity on cognitive aspects and are different on social aspects. Not much research studies have also been carried in this area, which could throw light on differences and similarities on the conceptualisation of creativity among different culture.

2.5 Conclusion

On the basis of review of the literature, it could be said that researchers have studied creativity from a number of perspectives and cover a vast area. Studies done in the area of how personality, intelligence and demographic variables relate to creativity are many a times inconclusive in nature. Most of the studies have neglected the cultural and social aspects of creativity and fails to explain how a creative person is defined holistically in a given culture. Majority of researches followed the dominant Western notion of creativity and used the tests developed in the West, whose validity is questionable for other cultures. This shortcoming led to another tradition of research which explores the implicit or folk notion of creativity.

Among Indian researches the empirical studies on the implicit creativity theories are rare. There is also paucity of standardised instruments that can be used by the researchers to study creativity. In most of studies the social and cultural aspects have also been under emphasised. From the above review of studies it can be concluded that studies on implicit creativity theories of people in non-western cultures are very scant and uncommon. And most of the existing studies focus on implicit theories of specific Chinese cultural groups.

Thus it might be interesting to investigate the notions of creativity among the Indian graduate and postgraduate students. In this context, the questions that emerged are as follows:

1. What is the notional understanding of creativity among the Indians.
2. Do men and women differ in their conception of creativity.
3. What are the factors involved in the conceptualisation of creativity among common people.
4. How the Indian notion of creativity is different from Western and other Asian notions of creativity.

The present study is an attempt to answer these questions.

CHAPTER-3

METHODOLOGY

3.1 Introduction

The preceding chapter dealing with the review of literature related to the phenomena of creativity established the need to study creativity from a social-psychological perspective. It is therefore imperative to identify and study the implicit or everyday understanding of creativity among the graduate and post graduate students from socio-psychological perspective with the main aim being amply reflected in the title:

Notion of Implicit creativity with Indian students: A Social Psychological study of graduate and post graduate students in Allahabad.

The present chapter discusses the objectives of the study, rationale behind the objectives, design of the study, sample of the study, procedure for data collection and administration of questionnaire and the analysis of the data.

This chapter focuses on describing the methodology used in planning and conducting the present study. The present study attempted to explore how the socio-psychological factors influence the notional understanding of creativity among the students. The study also aims to find out the differences and similarities in the conceptions of creativity between Indian, Western and other Asian cultures. The objectives of the study are as follows: -

3.2 Objectives

Objective 1: What is the notional understanding of the term creativity among the Indian students.

Rationale:

Sternberg and Lubart (1989) suggest that creativity can be understood as the confluence of person variables (intellectual processes, knowledge, intellectual style, personality, motivation) and environment variables (physical setting, state of the field

of endeavour, culture). The influence of the environment on creativity and the manner in which person and environment variables interact here, however, rarely been explored.

Implicit creativity theories allow us to judge creative behaviour even if we can not define creativity (Runco, 1999), because implicit theories are easier to share than formal definitions of the construct. Knowledge of implicit creativity theories facilitates both planning and evaluations of efforts to foster creativity (Plucker & Renzulli, 1999, Sternberg, 1987, 1993).

Implicit creativity theories may also facilitate cross cultural research on creativity, since implicit theories tend to reflect cultural influences of a society upon its members (Ruzgis & Grigorenko, 1994) and facilitates the identification of important cultural differences in ways people conceptualise and assess creativity. In some cases, Western views of psychological constructs (creativity, wisdom and intelligence) are different from views in other cultures. This potential benefit is illustrated in the studies of implicit intelligence theories, which provide evidence that African and Asian populations may accent the importance of conformity and competence to a greater degree than populations in Western countries (Azuma & Kashiwagi, 1987, Irvine, 1970, Ruzgis & Grigorenko,1994, Rudowicz & Hui, 1997, Sternberg & Kaufman, 1998) As a result researchers have questioned the use of traditional, western intelligence tests in Asian countries, given that these tests do not provide insight in to the test takers social competence.

We believe both explicit and implicit theories of creativity should be of interest to psychologists. Explicit theories are interesting because the importance of creativity to psychological theory and measurement, as well as to society, makes it worthwhile to know, insofar as we are able, what creativity is; because these theories can serve as the basis for the systematic and rational assessment and eventually, training of creativity; and because these theories can suggest where people's conceptions are adequate and where they are inadequate, and thereby help shape these conceptions. Implicit theories are interesting because the importance of creativity in our society makes it worthwhile to what people mean by creativity; because these theories do in fact serve as the basis

of informal, everyday assessment and training of creativity; and because these theories may suggest aspects of creativity behaviour that needs to be understood but are overlooked in available explicit theories of creativity.

Objective 2: How the Indian notion of creativity is different or similar to other Asian and Western conceptions of creativity.

Rationale:

More often than not, creativity is discussed in the literature as if it is culture-free. Only in the recent years has the cultural aspect of creative thinking been studied explicitly. Of late, cultural differences in creativity has not only been expressed through conceptual discourse but also investigated empirically. For instance, Wonder and Blake (1992) contrasted at a conceptual level the East and West views of creativity as being intuitive versus logical, resounding the earlier writing of the Italian philosopher Croce (1992), who, in his discussion of aesthetics, maintained that knowledge is either intuitive or logical.

Creative expressions can not be isolated from social, cultural and historical milieu in which it takes place since creativity does not occur without a context. Any meaningful discussion or research of creativity has to pay attention to forces which have impact on shaping creative individuals and their products. The cultural, social and physical environment is not only involved in facilitating or hindering an individual's creativity but also in the definition and evaluation of creative product (Chan and Chan, 1999; Csikszentmihalyi, 1988; Lubart, 1990; Eysenck, 1993; Rudowicz and Hui, 1996). Creativity, therefore, is considered as the function of a judgement made by people. These judgements are in turn influenced by the social, cultural, economic and political trends and traditions of their time and place (Csikszentmihalyi, 1988; Montuori and Purser, 1995). Consequently, attribution of creativity is relative and is grounded in social judgement and agreement in a given place, at a given time. What is considered creative today in India may not be considered creative in contemporary France and may not have been considered creative in ancient India.

Creative performance, as suggested by Sternberg and Lubart (1991), results from a confluence of person variables such as intellectual style and processes, knowledge, personality, motivation, and environmental context such as geographical/ physical environment and culture. Although creativity researchers recognise that social and cultural norms and practices affect the development and expression of creativity, the impact of these sources on creativity has been generally underestimated and barely been explored (Lubart, 1990). Most creativity researchers focused on creative individuals (Csikszentmihalyi, 1996; Helsen, 1996; Montgomery, Bull, Baloche, 1993; Simonton, 1992) or conceptualisation of creativity (Sternberg, 1985; Runco and Bahleda, 1987). For instance, Smith and Wright (2000) reported that British undergraduates tended to perceive people like Einstein, Newton, Leonardo da Vinci and Mozart as stereotypical geniuses. Politicians and females were rarely nominated as being representative of genius.

Recent empirical studies exploring conceptions of creativity in other than the Western socio-cultural contexts (Chan and Chan, 1999; Fryer and Collings, 1991; Khaleefa, Erdos, Ashira, 1996; Raina, Kumar, and Raina, 1980; Rudowicz and Hui, 1997, 1998) show that adding a cultural dimension to creativity allow us to differentiate between the universal and cultural specific aspects of the concept. Cultural and socio-historical contexts not only influence conceptualisation of creativity but also people's attitudes towards the value and the utility of creative endeavours. Culture also influences how creativity is perceived and channelled. Different cultural and historical circumstances encourage creativity in some situations and domains, and discourage it in others. As the results of Rudowicz and Hui (1998) study pointed, Hong Kong people, in contrast to North Americans, identified creative achievement with financial and political accomplishments rather than with aesthetic or artistic ones. Moreover, cultural norms and traditions may restrict creativity to different status or gender based groups (Lubart, 1990). Chinese culture and society, with its five thousand years of history, has undergone different cultural, social, political, and historical perturbations, but still it maintains a very strong identity and distinctiveness. Creativity and originality expressed in Chinese poetry, music, politics, sculpture or even cuisine seems to be practiced in a different manner as compared with those in North American or European cultures. Besides, the Chinese culture is known for its collectivist orientation, respect

for elders, and aspiration to maintain social harmony through compromise, moderation, and conformity (Dunn, Zhang, and Ripple, 1988). Consequently an individual achievement is often linked to group oriented achievement. Therefore there is a need to study creativity from social Psychological perspective.

3.3 Design of the study

The study was undertaken in two phases. The first phase of the study was an exploratory study in which an open-ended questionnaire (enclosed as Appendix 1) was used. In this study researcher was set out to compile a master list of creative behaviours. Following Sternberg et al. (1981), each subject was administered an open-ended questionnaire. The questionnaire asked the subjects to list whatever behaviours they could think of that were characteristic of an ideally creative person in their respective fields of endeavour. Subjects were asked to spend five to ten minutes on the task and were told that their answers would be kept confidential and that there were no correct or incorrect answers.

On the basis of the responses generated in the preliminary analysis, behaviours were identified and a master list of creative behaviours was prepared. The study yielded a master list of 41 behaviours (out of total 73 behaviours), each of which was suggested by at least 6 respondents (left column in Table-1). For example, item 4, 'is very patient' was included because it was listed by 32 participants, but 'is future oriented' was excluded because only 3 subjects listed it. Similarly, item 41. 'is headstrong' was included because it was listed by 36 participants, but , 'is liberal' was excluded because only 5 subjects listed it. Results with this sample are similar to those obtained by Runco et al.(1993), who provided evidence that teachers' and parents' implicit creativity theories were characterised by adjectives such as active, adventurous, artistic, curious, enthusiastic, and imaginative (Runco, 1984, 1989; Runco and Bahleda, 1986). The behaviours are listed in Table-3.1 in no particular order.

In the second phase of the study the researcher examined the factor structure of the Indian students' conceptions of creativity. That is, the second phase of the study

was intended to elucidate the structure and content of student's conceptions of creativity. For this survey questionnaire used (enclosed as Appendix 2) were based on the master list of 41 creative behaviours compiled in the first phase of the study administered on the selected sample of the students. Participants were asked to rate how characteristic each of the 41 behaviours was of an ideally creative person. Participants used a scale ranging from 1(low) to 5 (very high).

Table- 3.1

Master list of creative behaviours.

Item	n	M	SD
An Ideal Creative Person –			
1. thinks differently from others.	23	3.66	1.15
2. is very patient.	17	3.38	1.26
3. thinks in a logical and scientific way.	33	3.50	1.27
4. is good at leading others.	18	3.24	1.21
5. is imaginative.	21	3.58	1.37
6. is very intelligent.	34	3.52	1.09
7. manages his/her time well.	15	3.36	1.21
8. is very independent.	9	3.56	1.20
9. does not pay attention to other's criticism.	11	3.35	1.37
10. is very sensitive.	7	3.27	1.31
11. is flexible.	14	3.06	1.28
12. is thoughtful.	29	3.67	1.22
13. uses old ideas to find new ideas.	36	3.41	1.19
14. is a loner.	18	2.55	1.35
15. is introverted.	12	2.81	1.35
16. has good communication skills.	29	3.42	1.21
17. is responsible.	38	3.45	1.21
18. sees possibility in failures.	13	3.69	1.12
19. has good social skills.	41	3.32	1.08

Item	n	M	SD
20. is helpful to others.	19	3.20	1.26
21. do not make compromises.	29	2.99	1.39
22. has a long attention span.	15	3.49	1.04
23. adapts well to different situations.	31	3.59	1.10
24. is self-confident and comfortable.	44	3.66	1.20
25. has lots of ideas.	47	3.83	1.19
26. is unique and original.	13	3.65	1.27
27. has a wide area of knowledge	24	3.63	1.08
28. is headstrong.	27	3.33	1.20
29. understands well, decisive, and insightful.	13	3.75	1.06
30. has lots of divergent ideas.	17	3.54	1.19
31. does not limit oneself to the society's standards.	23	3.48	1.22
32. is friendly.	31	3.16	1.20
33. is determined toward his/her work.	24	3.94	1.02
34. has a high self esteem	15	3.48	1.16
35. is emotional.	11	2.99	1.29
36. loves to take risk.	16	3.68	1.19
37. is perfectionist never satisfied with his/ her works.	28	3.34	1.17
38. is indifferent to other's opinions.	15	3.16	1.23
39. has ability to make quick decisions.	33	3.70	1.07
40. has a good moral character.	47	3.42	1.20
41. is very observant.	23	4.01	1.02

3.4 Sample

Incidental sampling was done for the purpose of the research study. For the first phase of the study the sample consisted of 290 students of graduate and post graduate level from Allahabad University. The sample consisted of 129 female students (in which 69 students were from Arts background and 60 were from science background) and 121 male students, (out of which 55 students belonged to science stream and 66 were from Arts stream). In the total sample of 290, 168 students were graduate and 122 were postgraduate students.

For the second phase of the study the sample consisted of total 205 graduate and post-graduate students from Allahabad University. The sample consisted of total 89 female and 116 male students, out of which 93 students were post graduate students and 112 were graduate students (out of which 87 belonged to science stream and 112 were from Arts stream). Because of the paucity of the time, it was not possible to go for the random sample. Instead, an incidental sampling technique was used to select students from the University for the present Study.

3.5 Procedure for data collection & administration of questionnaire

The head of the departments of various faculties of Allahabad University were approached and convinced about the objective of the research. After getting formal permission, the questionnaire developed was administered on the students. The students were given the general instructions about how to provide response on the questionnaire. The instruction given to the students is mentioned in the questionnaire enclosed in the appendix along with the respective questionnaires.

In the questionnaire the data were collected on the 5-point scale in which "1" referred to the behaviour that was low characteristic of an ideally creative person, "2" referred to the behaviour that was somewhat characteristic of an ideally creative person, "3" referred to the behaviour that was moderately characteristic of an ideally creative person, "4" referred to the behaviour that was highly characteristic of an ideally

creative person and "5" refers to the behaviour that was very highly characteristic of an ideally creative person.

3.6 Analysis of data

The data were analysed using both quantitative and qualitative tools. The ratings were factor analysed using correlation coefficients as input in to principal component analysis, followed by Varimax rotation of factorial axes with Kaiser Normalisation. Several other studies of implicit theories have also used principal components extraction and Varimax rotation (Nevo and Khader, 1995; Sternberg et al., 1981). The researcher found it reasonable to assume that the factors of creativity, as with most psychological constructs, are correlated in nature. therefore, the varimax rotation was used (Thorndike, 1997).

In the second section, the researcher tried to compare and contrasted the findings of the present study with already existing studies in the field of implicit creativity to find out the differences and similarities in the conceptualisation of notion of creativity among Indian students and other Western and Asian conceptualisations.

CHAPTER- 4

ANALYSIS & DISCUSSION

The present chapter is concerned with the analysis and the discussion of the data collected. The main focus of the study, as has been previously explicated is to find how the notional understanding of creativity construed among the Indian students. The chapter also compared the Indian notion of creativity with other Asian and Western conceptualisation of creativity. The chapter has two sections

Section: 1

The first section deals with the analysis of the data obtained from the first and second phase of the study. The findings are being presented in accordance with the objectives. The first objective has been studied through identifying factors using principal component analysis with varimax rotation as a statistical tool to process the data obtained from graduate and post graduate students of Allahabad University.

Table No. 4.1 describes the factors and their respective loadings, mean and standard deviation scores, their respective Eigen values and percentage of variations, and the cumulative percentage of variance contributed by the identified factors.

Table- 4.1

Rotated factor matrix for total Population (N=205)

Item No.	F1	F2	F3	F4	M	S.D.
1					3.66	1.15
2	.570				3.38	1.26
3					3.50	1.27
4		.661			3.24	1.21
5					3.58	1.37
6		.364	.599		3.52	1.09
7		.354			3.36	1.21
8					3.56	1.20
9					3.35	1.37
10			.511		3.27	1.31
11				.425	3.06	1.28
12					3.67	1.22
13					3.41	1.19
14					2.55	1.35
15					2.81	1.35
16	.445				3.42	1.21
17	.784				3.45	1.21
18					3.69	1.12
19					3.32	1.08
20	.661	.367			3.20	1.26
21			.692		2.99	1.39
22				.413	3.49	1.04
23		-.383	-.403	.404	3.59	1.10
24					3.66	1.20
25					3.83	1.19
26					3.65	1.27
27		.684			3.63	1.08
28				.737	3.33	1.20
29					3.75	1.06
30					3.54	1.19
31					3.48	1.22
32	.539				3.16	1.20
33					3.94	1.02
34					3.48	1.16
35					2.99	1.29
36					3.68	1.19
37			.454	.382	3.34	1.17
38					3.16	1.23
39					3.70	1.07
40		.497			3.42	1.20
41					4.01	1.02
Eigen Value	**3.844**	**2.033**	**1.708**	**1.579**		
% of Var.	**15.377**	**8.133**	**6.830**	**6.315**		
Cumulative % of Var.	**15.377**	**23.51**	**30.34**	**36.65**		
Unexplained Variance	**73.35%**					

Interpretation:

Factor analysis of the scores obtained from the graduate and post graduate students (table no. 4.1) resulted in four factors explaining about 36.65 % of total variance. The first factor consisted of items having positive factor loading greater than .35 on item no. (2, 16, 17, 20, 32) and explained 15.38% of the total variance. This factor contained items such as, an ideal creative person is responsible (.78), helpful to others (.66), very patient (.57), friendly (.54) and good communication skills (.45). This factor is named as "sociability" factor.

Out of these five items one item 'is friendly' loaded also on the factor 2. Since, thematically it could be grouped with other items of factor 1, this was therefore retained in this factor.

The inter-item correlation (refer appendix-3) among the different items of the factor revealed that the items of the factor are mutually dependent on each other and measures the related attribute. Therefore, the factor is perceived to be internally consistent.

The second factor is spread over seven items (4, 6, 7, 20, 23, 39, 40) and explained 8.13% of total variance. Out of these 7 items, 6 had positive factor loadings greater than .35 and 1 item had negative factor loading. They together explained a total variance of 8.13%. This factor consisted of items such as 'has ability to make quick decisions' (.68), 'is good at leading others' (.66), 'has a good moral character' (.49), 'is helpful to others' (.37), 'is very intelligent' (.36), 'manages his/her time well' (.35), and 'adapts well to different situations' (- .38). This factor is named as "leadership".

Out of these seven items, 'is intelligent' had dual positive factor loading. This item is also loaded with factor 3. Similarly, the item 'is helpful to others' had been loaded with factor 1. Item 'adapts well to different situation' had dual negative factor loading with factor 2 and factor 3 and was positively loaded with factor 4. Since, thematically it

could be grouped with other items of factor 3 and factor 4, this was therefore been retained in this factor.

The inter-item correlation (refer appendix-4) among the different items of the factor also suggests high internal consistency. Four items (item no. 4, 20, 27, 40) are significantly correlated (at level .01) with all the other six items. Except with item no. (6, 7, 19, 23) all the items of this factor are having significant positive correlation with the factor total.

The third factor is spread over five items (6, 10, 21, 23, 37) and explained 6.83% of total variance. Out of these four items (6, 10, 21, 37) had positive factor loading and one item 'adapts well to different situations' had negative factor loading. This factor consisted of items such as 'do not make compromises (.69), 'is very intelligent' (.59), 'is very sensitive' (.51), 'is perfectionist never satisfied with his/her works' (.45) and 'adapts well to different situations' (-.40). This factor is named as ''unconventional personality orientation''.

Among these items 'is very intelligent' and 'is perfectionist never satisfied with his/her works', have dual factor loading with factor 2 and factor 4 respectively. Item 'adapts well to different situations' also loaded on factor 2, factor 3 and factor 4. Since, thematically it could be grouped with other items of factor 2, 3, and factor 4, this was therefore retained in the factors.

The inter-item correlation among different items of this factor (refer appendix-5) suggests that four items (6, 10, 21, 37) of the factor are significantly correlated among each other. Item 'adapts well to different situations' is negatively correlated with item 'do not make compromises' ($r=-.167$, $p<.05$) and is not correlated with any other item of the factor 'unconventional personality orientation'. However, this item has been found to have significant positive correlation ($r=.254$, $p<.01$) with the factor total. All the items of the factor are positively correlated with the

factor total. Thus it could be concluded that there is high internal consistency in this factor as well.

The fourth factor is spread over five items (11, 22, 23, 28, 37) and explained 6.31% of total variance. These items were 'is head strong (.74)', 'is flexible (.43)', 'has a long attention span (.41)', 'adapts well to different situations (.40)', and 'is perfectionist never satisfied with his/her works (.38)'. Based on the items, this factor was named as "task persistence".

Out of these items, the item no. 23 loaded negatively with factor 2 and factor 3 and positively with factor 4. This item explains the factor 4 better than the other two. Item 'is perfectionist never satisfied with his/her works' also loaded with factor 3 and factor 4. This attribute or trait could be a core trait of both "unconventional personality orientation" as well as "task persistence". Therefore this item was retained in both the factors.

The inter-item correlation (refer appendix-6) among the different items of the factor suggests moderate internal consistency. One item (item no.22 'has a long attention span') was significantly correlated (at .01level) with all the other items and two items (item no. 23 and 28) were correlated with three other items of the factor (item 11, 22 & 28 and item no. 22, 23, 37 respectively). Item no. 11 & 37 are correlated with only two other items of the factor (item no. 22 & 23, and 22 & 28 respectively).

The factors underlying students conceptions of creativity with the factor name, the items and their factor loadings are listed in the Table no. 4.2.

Table 4.2

Factors underlying student's conceptions of creativity

Factor 1: Sociability	Factor Loadings
17. is responsible.	0.784
20. is helpful to others.	0.661
2. is very patient.	0.570
32. is friendly.	0.539
16. has good communication skills.	0.445
Factor 2: Leadership	
39. has ability to make quick decisions.	0.684
4. is good at leading others.	0.661
40. has a good moral character.	0.497
20. is helpful to others	0.367
6. is very intelligent.	0.364
7. manages his/her time well.	0.354
23. adapts well to different situations.	-0.383
Factor 3: Unconventional Personality orientation	
21. do not make compromises.	0.692
6. is very intelligent.	0.599
10. is very sensitive.	0.511
37. is perfectionist never satisfied with his/her works.	0.454
23. adapts well to different situations.	- 0.403
Factor 4: Task Persistence	
28. is headstrong.	0.737
11. is flexible.	0.425
22. has a long attention span.	0.413
23. adapts well to different situations.	0.404
37. is perfectionist never satisfied with his/her works.	0.382

Table 4.3

Factor Correlation Matrix for total population (N=205)

	TF1	TF2	TF3	TF4	TFT
TF1	1.00	.604**	.253**	.269**	.751**
TF2	.604**	1.00	.344**	.296**	.821
TF3	.253**	.344**	1.00	.584**	.687**
TF4	.269**	.296**	.584**	1.00	.674**
TFT	.751**	.821**	.687**	.674**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

Interpretation

Analysis of the table no. 4.3, indicate that all four factors are strongly positively correlated with the total score on the creativity. The factor 1 has a correlation score of ($r=.75$, $p<.01$), factor 2 has a correlation score of ($r= .82$, $p<.01$), factor 3 has a correlation score of ($r= .69$, $p<.01$) and factor 4 has a correlation score of ($r= .67$, $p<.01$) with total creativity score. Significant correlations have been found among these factors at.01level of significance. Thus, it could be said that all these factors are mutually dependent on each other.

Table- 4.4

Rotated factor matrix for Male students (N= 116)

Item No.	F1	F2	F3	F4	M	S.D.
1					3.66	1.15
2	.464				3.38	1.26
3					3.50	1.27
4			.646		3.24	1.21
5					3.58	1.37
6		.704			3.52	1.09
7					3.36	1.21
8					3.56	1.20
9					3.35	1.37
10		.672			3.27	1.31
11					3.06	1.28
12					3.67	1.22
13			.838		3.41	1.19
14					2.55	1.35
15	.355				2.81	1.35
16	.709				3.42	1.21
17	.838				3.45	1.21
18					3.69	1.12
19					3.32	1.08
20	.722				3.20	1.26
21		.452			2.99	1.39
22					3.49	1.04
23				.801	3.59	1.10
24					3.66	1.20
25					3.83	1.19
26					3.65	1.27
27					3.63	1.08
28			.380		3.33	1.20
29					3.75	1.06
30		.355			3.54	1.19
31					3.48	1.22
32	.471				3.16	1.20
33					3.94	1.02
34					3.48	1.16
35					2.99	1.29
36					3.68	1.19
37		.489			3.34	1.17
38				.437	3.16	1.23
39				.437	3.70	1.07
40					3.42	1.20
41					4.01	1.02
Eigen Value	**3.379**	**2.106**	**1.953**	**1.761**		
% of Var.	**13.516**	**8.424**	**7.814**	**7.045**	3.38	

Interpretation

Factor analysis of the data on traits explaining creativity by the male graduate and post graduate students (table no. 4.4) resulted in four factors explaining about 36.80 % of total variance. The first factor contained positive factor loading greater than .35 of six items (2, 15, 16, 17, 20, 32) and explained 13.52% of the total variance. These items were 'is responsible (.84), 'is helpful to others (.72), 'has good communication skills (.71), 'is friendly (.47), 'is very patient (.46), and 'is introverted (.36)'. This factor was labelled as "sociability and social responsibility".

The inter-item correlation between the items of the factor 'sociability' revealed (refer appendix-7) that item no. 2 was positively correlated with four items, such as item no.16, 17, 20 & 32. Item no. 17 was found to be positively correlated with three items (item no. 2, 16 & 32) and negatively correlated with item no. 15. Item no. 16 and 32 are found to be positively correlated with three items (item no. 2, 17& 32 and 2, 16 & 17 respectively). Thus it could be concluded that the factor is moderately internally consistent.

The second factor is spread over five items (6, 10, 21, 30, 37). All the items had positive factor loading greater than .35 and explained 8.42% of total variance. These items were 'is very intelligent' (.71), 'is very sensitive' (.67), 'is perfectionist never satisfied with his/ her works' (.49), 'do not make compromises' (.45), and 'has lots of divergent ideas' (.36). The factor was named as ''unconventional personality orientation''.

The inter-item correlation between the items of the factor 'Unconventional personality orientation' revealed (refer appendix-7) that item no. 6 and 37 are positively correlated with three items such as item no.10, 21 & 37 and 6, 21 & 30. Item no. 21 was found to be positively correlated with two items (item no. 6 and 37). Item no. 10 and 30 were found to be positively correlated with one item each (item no. 6 and 37

respectively). Thus it could be concluded that the factor is moderately internally consistent.

The third factor is spread over three items (4, 13, 28). All the items had positive factor loading greater than .35 and explained 7.81% of total variance. This factor items such as 'uses old ideas to find new ideas' (.838), 'is good at leading others' (.646), and 'is head strong' (.380). This factor was names as ''manipulative''.

The inter-item correlation between the items of the factor 'manipulative' (appendix-8) suggests that none of the items of the factor are significantly correlated to each other. Thus it could be contended that items are mutually independent and factor is relatively internally inconsistent.

The fourth factor has been spread over three items (23, 38, 39) and explained 7.05% of total variance. These items were 'adapts well to different situations' (.801), 'is indifferent to other's opinions' (.437), and 'has ability to make quick decisions' (.437). This factor was named as ''independence''.

The inter-item correlation between the items of the factor 'Independence' revealed (refer appendix-8) that item no. 23 is positively correlated with other two items such as item no. 38 and 39 of the factor. Item no. 38 and 39 are found not significantly correlated with each other. Thus it could be concluded that the factor is moderately internally consistent.

The factors underlying male students' conceptions of creativity with the factor name, the items and their factor loadings are listed in the Table no. 4.5.

Table 4.5

Factors underlying male student's conceptions of creativity

Factor-1: Sociability and social responsibility

	Factor loadings
17. is responsible.	0.838
20. is helpful to others.	0.722
16. has good communication skills.	0.709
32. is friendly.	0.471
2. is very patient.	0.464
15. is introverted.	0.355

Factor-2: Unconventional personality orientation

6. is very intelligent.	0.704
10. is very sensitive.	0.672
37. is perfectionist never satisfied with his/ her works.	0.489
21. do not make compromises.	0.452
30. has lots of divergent ideas.	0.355

Factor-3: Manipulative

13. uses old ideas to find new ideas.	0.838
4. is good at leading others.	0.646
28. is head strong.	0.380

Factor-4: Independence

23. adapts well to different situations.	0.801
38. is indifferent to other's opinions.	0.437
39. has ability to make quick decisions.	0.437

Table 4.6

Factor correlation matrix for males (N=116)

	MF1	MF2	MF3	MF4	MFT
MF1	1.00	.072	.089	.244**	.669**
MF2	.072	1.00	.138	.006	.603**
MF3	.089	.138	1.00	.340**	.528**
MF4	.244**	.006	.340**	1.00	.550**
MFT	.669**	.603**	.528**	.550**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

Interpretation

Analysis of the table no. 4.6, indicate that all the four factors are strongly positively correlated with the total score on the creativity. The factor 1 has a correlation score of r=.67 (p<.01), factor 2 has a correlation score of r= .60 (p<.01), factor 3 has a correlation score of r= .53 (p<.01) and factor 4 had a correlation score of r= .55 (p<.01) with total creativity score. There has also been found significant correlation between factor 1 and factor 4 (r=.244, p< .01) and factor 3 and factor 4 (r=.340, p <.01). Thus, it could be said that factor 1 and factor 3 are mutually dependent on factor 4 where as factor 2 is mutually independent of all the other factors emerged in the study. This reveals that male students did not perceive any relationship between sociability and unconventional personality orientation and also between sociability and manipulative. Where as they perceived strong relationship between independence and manipulative.

Table- 4.7

Rotated factor matrix for Female students (N= 89)

Item No.	F1	F2	F3	F4	M	S.D.
1					3.66	1.15
2					3.38	1.26
3					3.50	1.27
4	.549				3.24	1.21
5					3.58	1.37
6		.364			3.52	1.09
7		.644			3.36	1.21
8					3.56	1.20
9					3.35	1.37
10				.787	3.27	1.31
11			.724		3.06	1.28
12					3.67	1.22
13					3.41	1.19
14					2.55	1.35
15					2.81	1.35
16		.740			3.42	1.21
17	.395		.470		3.45	1.21
18					3.69	1.12
19		.640	.414		3.32	1.08
20	.574				3.20	1.26
21				.617	2.99	1.39
22					3.49	1.04
23			.668		3.59	1.10
24					3.66	1.20
25					3.83	1.19
26					3.65	1.27
27	.607				3.63	1.08
28					3.33	1.20
29					3.75	1.06
30	.387				3.54	1.19
31					3.48	1.22
32		.381	.578		3.16	1.20
33					3.94	1.02
34		.500			3.48	1.16
35	.516			.557	2.99	1.29
36					3.68	1.19
37					3.34	1.17
38					3.16	1.23
39					3.70	1.07
40	.774				3.42	1.20
41					4.01	1.02
Eigen Value	**4.959**	**2.487**	**1.988**	**1.593**		
% of Var.	**19.838**	**9.948**	**7.952**	**6.373**		

Interpretation

Factor analysis of the data on traits explaining creativity by the female graduate and post graduate students (table no. 4.7) resulted in four factors explaining about 44.11 % of total variance. The first factor contained positive factor loadings of seven items (3, 17, 20, 27, 30, 35, 40) and explained 19.83% of the total variance. These items were 'has a good moral character' (.77), 'has ability to make quick decisions' (.61), 'is helpful to others' (.57), 'is good at leading others' (.55), 'is emotional' (.52), 'is responsible' (.39), and 'has lots of divergent ideas' (.39). This factor was named as "leadership".

Out of these seven items, the item no. 17 and 35 also loaded with factor 3 and factor 4 respectively. Since, thematically it could be grouped with the other items of the factor 3 and factor 4, this was therefore retained in the factors.

The inter-item correlation for the factor 1 of female students (appendix-9) revealed that the items are mutually dependent on each other and factor has moderate level of internal consistency.

The second factor spread over six items (6, 7, 16, 19, 32, 34). All the items had positive factor loading and explained 9.95 % of total variance. These items were 'has good communication skills' (.74), 'manages his/her time well' (.64), 'has good social skills' (.64), 'has a high self-esteem' (.50), 'is friendly' (.38), and 'is very intelligent' (.36). This factor is labelled as "sociability".

Out of these six items two items such as 'has good social skills', and 'is friendly' also loaded with factor 3. Thematically it could be grouped with the other items of the factor 3, this was therefore retained in the factor.

The inter-item correlation (refer appendix-9) among the different items of the factor suggests that the items of the factor are mutually dependent on each other and measures the related attribute. Therefore, the factor is internally consistent.

The third factor spreaded over five items (11, 17, 19, 23, 32). All the items had positively loaded on this factor and together explained 7.95% of total variance. These items were 'is flexible' (.72), 'is responsible' (.47), 'adapts well to different situations' (.67), 'is friendly' (.58), and 'has good social skills' (.41). This factor was named as "openness".

The inter-item correlation between the items of the factor 'openness' revealed (refer appendix-9) that the item no. 23 and 32 are positively correlated with four item (item no. 11, 17, 19 & 32 and 11, 17, 19 & 23, respectively). Item no. 17 and 19 are found to be positively correlated with three items each (item no. 19, 23 & 32 and 17, 23 & 32 respectively). Item no. 11 is found to be positively correlated with item no. 23 & 32.Thus it could be concluded that the factor has high internal consistency.

Out of these six items, items such as 'has good social skills', and 'is friendly' also loaded with factor 2.

The fourth factor spreaded over three items (10, 23, 35) and explained 6.37% of total variance. All the items in this factor were positively loaded on the factor. This factor included items such as 'is very sensitive' (.79), 'do not make compromises' (.62), and 'is emotional' (.56). This factor has been named as "perceptive".

The inter-item correlation between the items of the factor 'perceptive' revealed (refer appendix-10) that item no. 10 is positively correlated with other two items (item no. 21 and 35) of the factor. Item no. 21 and 35 are found not significantly correlated with each other. Thus it could be concluded that the factor is moderately internally consistent.

The factors underlying female students' conceptions of creativity with the factor name, the items and their factor loadings are listed in the Table no. 4.8.

Table 4.8

Factors underlying female student's conceptions of creativity

	Factor Loadings
Factor 1: Leadership	
40. has a good moral character.	0.774
39. has ability to make quick decisions.	0.607
20. is helpful to others	0.574
4. is good at leading others.	0.549
35. is emotional.	0.516
17. is responsible.	0.395
30. has lots of divergent ideas.	0.387
Factor 2: sociability	
16. has good communication skills.	0.740
7. manages his/her time well.	0.644
19. has good social skills.	0.640
34. has a high self esteem.	0.500
32. is friendly.	0.381
6. is very intelligent.	0.364
Factor 3: Openness	
11. is flexible.	0.724
23. adapts well to different situations.	0.668
32. is friendly.	0.578
17. is responsible.	0.470
19. has good social skills.	0.414
Factor 4: Perceptive	
10. is very sensitive.	0.787
21. do not make compromises.	0.617
35. is emotional.	0.557

Table 4.9

Factor correlation matrix for females (N=89)

	FF1	FF2	FF3	FF4	FFT
FF1	1.00	.535**	.525**	.414**	.814**
FF2	.535**	1.00	.602**	.148	.868**
FF3	.525**	.620**	1.00	.150	.839**
FF4	.414**	.148	.150	1.00	.281**
FFT	.814**	.868**	.839**	.281**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

Interpretation

Analysis of the table no. 4.9, indicate that all the four factor and strongly positively correlated with the total score on the creativity. The factor 1 has a correlation score of r=.81 (p<.01), factor 2 has a correlation score of r= .86 (p<.01), factor 3 has a correlation score of r= .84 (p<.01) and factor 4 had a correlation score of r= .28 (p<.01) with total creativity score. The factor 1 was found significantly correlated with factor 2 (r=.535, p< .01), with factor 3 (r=.525, p< .01) and with factor 4 (r=.414. p<.01). Factor 2 have also been found to be significantly correlated with factor 3 (r=.620, p<.01). Thus these different factors were found to be mutually dependent with among themselves.

Summary of factor analysis

On the basis of analysis of data for total population four factors have been identified which are labelled as 'sociable', 'leadership', 'unconventional personality orientation', and 'task persistence'. The factor analysis of items done separately for males and females extracted four factors each. In case of males the factors are 'sociable', 'unconventional personality orientation', 'manipulative', and 'perseverance'. And for

females the factors that underlie creativity were 'leadership', 'sociable', 'openness', and 'perceptive'.

Section – II

General discussion

The objectives mentioned in chapter-3 (methodology) are discussed in this section in the light of the results obtained in this study.

Objective 1: What is the notional understanding of the term creativity among the Indian students.

Factor analysis of the graduate and post graduate students (table no. 4.1 and table no. 4.2) resulted in four factors explaining about 36.65 % of total variance based on the items that constituted these factors, the factors are labelled as 'sociability', 'leadership', 'unconventional personality orientation', and 'task persistence'. In the Indian socio-cultural context where more emphasis is give on relational, emotional and social aspects of the individual. It is but natural that the notional understanding of a creative man will be based more on social and behavioural aspects than on just cognitive aspects. In the present study a creative person is perceived as helpful, patient, has ability to provide guidance, flexible, moral in character and having good communication skills. The first factor 'sociability' which has come out as the major factor in the conception of creativity among Indian students has also been explored in few Indian studies. Of these, some studies have reported that creative individuals scored high on the trait of sociability (Goyal, 1975; Nair, 1976; Gakhar and Joshi, 1980). However many studies conducted within western positivistic paradigm have reported that creatives are less sociable (Rehman and Hussain, 1973; Mallappa and Upadhyaya,1977; Paramesh and Upadhyaya, 1977; and Sansanwal and Jarial, 1979). All these studies never examined the construct itself. As a result, in many studies creative individuals have been reported as unfriendly and finding difficulty in making friends (Torrence, 1959; Rees and Goidman, 1961; Kurtzman, 1967; and Gopal, 1975).

From the above cited studies it can be inferred that no clear cut trend emerged as far as the relationship between creativity and sociability is concerned. This could be because most of these studies used tests developed in Western cultures with slight modifications in the items. But the underlying dimensions of creativity remains same. More explicitly stating, the emphasis continued to remain on the cognitive aspect of human being. The studies conducted by Rehman and Hussain (1973), Mallappa and Upadhyaya (1977), Parmesh and Upadhyaya and Gopal (1975) did not raise the fundamental question about cultural relevance of the construct 'creativity'. The validity tests were done in a routine manner. A supporting evidence to this argument is obtained from the present study. When people's notion of "creative person" was explored in this study, sociability and social responsibilities have come out as a major trait of a creative individual. Creative individuals were generally perceived as friendly and sociable in contrast to the general belief that they are less sociable than non creative individuals.

The second important dimension identified by the Indian students was "leadership'. No specific study has been found which has studied this personality correlate in relation to creative individuals. Though some studies have been done measuring self confidence (Reid et al., 1959; Weisberg and Springer, 1961; Kurtzman, 1967; Singh, 1978; and Pandey, 1980) and dominance (Barron, 1955, 1963; Stein, 1974) which may be treated as generalisation and as correlate of leadership in creative individuals. In India, a general belief is that creative persons need to have leadership quality. This can be seen in the social and political arena where leaders like Gandhi, emerged as a transformational leader because he had used innovative and creative ways to mobilise the general masses to fight against the British raj and also work for the betterment of the nation by leading from the front and setting examples for the masses.

The third factor emphasised by the students was 'unconventional personality orientation'. This notion of creativity is shared by the western notion of creativity. In many studies creative individuals are observed as unconventional in their personality orientation by researchers (Getzels and Jackson, 1958, 1959, 1960, 1961 and 1962; Barron, 1963; Stein, 1965; and Pandey, 1980) whereas, some researchers have reported them as conventional in their general outlook (Aron and Malatesha, 1972; Mac Kinnon, 1974; Gopal, 1975).

The fourth factor 'task persistence', is also seen as stable personality variable among the creative individuals. This finding is also similar to other western and Asian notions of creativity. The creative persons are generally seen as hard working, flexible, headstrong, have long attention span and adapt to different situations well. They are never satisfied to their achievements and constantly strive to further their ability and achievements. Some researchers have found a positive and stable relationship between the persistency and creativity (Peck, 1981; Reid et al., 1961; Weisberg and Springer, 1961; and Kaur, 1978).

All the four factors which are found to be the core dimensions according to Indian students are positively correlated with the total score of creativity and also these factors are positively correlated with each other (Table 4.3). Thus, it could be said that all four factors e.g. 'sociability', 'leadership', 'unconventional personality orientation', and 'task persistence', are mutually dependent on each other and together explain a creative individual.

Therefore it can be conclude that notion of creativity among Indian students are more or less social and relational in nature. It confirms the values and preferences of the Indians which put forth traditional collectivist spirit for the enhancement of the creative potential. It also confirms that original ideas, processes, and products of creative individuals could be appreciated, accepted and promoted more easily when they could be placed within the framework of the values of the sociocultural system

Factor analysis of the ratings of the male graduate and post graduate students (table no. 4.4 and table no. 4.5) resulted in four factors explaining about 36.80 % of total variance. These factors are labelled as 'sociability', 'unconventional personality orientation', 'manipulative', and 'independence'. Two out of four factors, namely 'sociability' and 'unconventional personality orientation' are same as in the factors identified in the ratings of total population. The other two factors 'manipulative' and 'independence' are the ones which only male students thinks as significant underlying dimensions of creativity.

Factor analysis of the ratings of the female graduate and post graduate students (table no. 4.7 and table no. 4.8) has also resulted in four factors explaining about 44.11 % of total variance. These factors are labelled as 'sociability', 'leadership', 'openness', and 'perceptive' comprises the conceptions of female Indian students of creativity. Two out of four factors, namely 'sociability' and 'leadership' are same as in the factors identified in the ratings of total population. The other two factors 'openness' and 'perceptiveness' are characteristics which have also been found in various researches in Western and other Asian contexts. Though in the Indian female student's conceptions of creativity emphasise more on relational variables like sensitive, emotional, flexible and social and friendly than cognitive variables of creativity like fluency, tolerance for ambiguity and preference for perceptual novelty and complexity. Openness to new ideas and views are seen as constant personality attribute for the creative individuals by the women students and not by the male students. The previous studies have also shown that creative individual never automatically accept the ''accepted'' (Sternberg, 1988), and are always open to new ideas (Schachtel, 1959; Hallman, 1963; Banton, 1967; and Goyal, 1969) and experiences (Walberg, 1971; Verma, 1973). Perceptiveness was also identified by the female graduate and undergraduate students as a desirable trait of a creative individual. This trait refers to the ability to sense things as they might be resembled; to a discrepancy; or an aperture or a hiatus. Creative individuals have been reported by other researchers to have possessed a high level of sensitivity to problems (Stein, 1953; Mooney, 1956; Fromm, 1959; Guilford, 1967; Helson, 1967; and Sharma, 1979).

Whereas males emphasised two traits such as "manipulation" and "independence" instead of "openness" and "perceptive". Manipulation is the ability to accept the conflict and tensions resulting from polarity (Fromm, 1959) and to tolerate inconsistencies and contradictions (Maslow, 1963), to accept the unknown and comfortable with the ambiguous, approximate and uncertainties. The studies conducted in this regard have indicated that creative individuals possess a high degree of manipulative powers to tolerate and also handle the ambiguity (Hart, 1950; Getzels and Jackson, 1958, 1959, 1960 and 1961; Barron, 1963; Goyal, 1969). This trait is also related to two other aspects of personality: (a) to toy with ideas; and (b) preference for complexity. The investigators have found that creative individual possess a preference

for complexity (Barron, 1955, Rao, 1976), whereas , Bakroczi, Buchler and Laszlo (1973) observed that creativity is not significantly related to simplicity complexity trait of personality. In Indian context, the present study reveals that it is the male students who value dimensions like manipulation as a constituent of creativity.

The factor 'independence' was also seen as a stable personality factor in the creative individuals by the Indian males. Independence in thought and action has been described as the dominant trait in the creative individuals by other researchers as well (Barron, 1955; Smith and Lucito, 1959; Holland, 1961; Getzels and Jackson, 1962 ;Torrance, 1965; Mac Kinnon, 1974; Nair, 1975; Bhargava, 1979 and Pandey, 1980). Some studies showed that creative individuals possess high degree of field independence (Fromm, 1959; Bloomberg, 1967; Rao, 1976 and Kumar, 1981). However in India women students do not find trait as one of the core constituent of creativity.

The difference between the males and females notions of creativity and factors identified in the present study were consistent with the findings of many previous studies in which girls generally differ in their conception of creativity in relation to the boys (Aliotti et al., 1975; Ruth and Birren, 1985; Schmidit and Senior, 1986; Torrance, 1965; and Wood et al., 1985). One of the explanations could be that the experience of freedom and independence, which affect the promotion of creative thinking, are not the same for males and females. These critical experiences depend on the level of education as well as the degree of authoritarianism in the sociocultural system. Kakar (1979) maintains that in Indian society a women's identity is as a whole defined by the relationships that she indulges in with others. Girls derive her identity from their relationship with other female relatives within their own family. The socialization experiences of males and females are different in the area of autonomy, independence, differing in ideas, deciding for oneself etc. Therefore the aspects the women emphasised are the more basic ones like one needs to be open, perceptive and social in order to be creative. There is an overtone of social responsibility in defining a creative individual by the women students. Whereas, male students who experience higher level of individuation during their childhood emphasise aspects like "independence", "manipulative", and "unconventional personality orientation". This clearly reveals that

even in the same culture men and women who have different socialisation experiences have different perceptions of an "ideal creative person". However, in both the groups, "sociability" factor contributed maximum variance. This indicates that even though both men and women differed in their notional understanding of an ideal creative person, but both the groups perceived sociability and social responsibility as the core dimension of creativity in Indian context. This reflects the paramount influence a collectivistic culture has on human psyche as well as on development of concepts and phenomena. Result of the study seem consistent with the findings from other traditional cultures. The studies done by Helode (1988), Shukla (1982), and Tuli (1982) from India, Mar'I (1983) in Arab culture, and Akinboye (1982) in Nigeria lend support to the present findings.

The four factors which are found in the conceptions of creativity of male students are strongly positively correlated with the total score on the creativity (Table 4.6). Significant positive correlations were also found between 'sociability' and 'independence', and between 'manipulative' and 'independence'. But no relationship was found between sociability and manipulative. Similarly 'Unconventional personality orientation' was found to have no correlation with any other factors emerged in the study. This can be explained on the basis of male student's relative position and worth in the Indian society. The Indian social system, with few exceptions, is characterised by patriarchy. Patriarchy recognises male dominance and female subordination (Dube, 1990). The males have all the opportunity and benefits as compared to their female counterparts. They are the bread winner of the family therefore they receive all the leverages like good education, care, respect, importance, support and independence or non conformity. Therefore their socialisation is quite different as compared to females hence they develop different self schema and outlook for life which is reflected in the factors found in the present study. Another probable reason could be their exposure to the western model of education which emphasise more on independence and self sufficiency.

Whereas, in case of female students, the four factors correlated strongly and positively with the total score of creativity (Table 4.9). Significant correlation was also found between 'leadership' with between 'sociabiltiy', and 'openness' and 'Perceptive' factors. The 'sociability' factor has also been found to be significantly correlated with 'openness' factor. Thus these different factors were found to be mutually dependent on each other and together explain a creative individual.

This revealed that the dimensions identified by the women students have overlapping domains or at least are derived from one common (or core) domain of sociability and social responsibility. Whereas in case of males, the underlying dimensions of creativity emphasised by them may not necessarily have overlapping domains. In other words, these dimensions are not derived from one core domain. This could be because, in typical Indian families men are encouraged to interact with the outside world much early in life and are made goal oriented. Men are made to emphasise ends more whereas the women are trained to emphasise means. This results in giving them two kinds of value system as well as perspectives. This probably explains why women emphasised particular set of traits which by and large corresponded to 'sociability and social responsibility' factor, whereas men along with sociability, emphasised 'manipulation' and 'independence'.

Objective 2: How the Indian notion of creativity is different or similar to other Asian and Western conceptions of creativity.

The present study has identified four major factors in the conceptualisation of the notion of creativity among Indian students. These factors are labelled as 'sociability', 'leadership', 'unconventional personality orientation', and 'task persistence'. The factor analysis of male and female students had also identified four factors each. Across the total population 'sociability' was found to be the common factor for males as well as females. Apart from sociability and leadership the other factors like unconventional personality orientation, task persistence, openness, manipulative, independence and perceptive are similar in orientation but not in content,

to those proposed by studies within Western and some Asian cultures like Korea and China. The major differences across cultures appears to be greater differentiation among cognitive behaviours by Americans and Koreans than among Indians whose emphasis is more on social, relational and emotional behaviours that contribute to creativity. Woong Lim and Plucker's (2001) study on implicit creativity with Korean students found that Korean students' conceptions of creativity are similar to the western conceptions of creativity, although Koreans may emphasise negative behaviours and personality characteristics to a greater degree. Employing implicit theories to evaluate the creativity, Korean adults strongly emphasise specific cognitive, personality, and motivational aspects of creativity over noncognitive aspects. This is also consistent with the recent investigations of implicit theories across several Chinese cultural contexts (Chan & Chan, 1999; Rudowicz & Hui, 1997; Rudowicz & Yue, 2000).

Yue and Rudowicz (2002) found a strong utilitarian view of creativity among Chinese young people's perception of creativity. Chinese adults are much more concerned with a creator's social influence or contribution in society than with his or her innovativeness in thinking. Besides, their finding also contrasts sharply with the finding that British undergraduates tended to consider accomplished scientists and artists as the stereotypical geniuses (Smith and Wright, 2000). In fact, it has been reported that Chinese people are inclined to judge creativity more in terms of one's social contribution to society than in terms of one's distinctiveness in creative thinking (Chan, 1997; Wu, 1996). Implicitly, the Chinese perception of creators can be seen as a merit based evaluation system, such that those who distinguish themselves in meritorious utility of creativity are more likely to be regarded than those who as prototypical figures of creativity than those who distinguish themselves in aesthetic utility of creativity (Yue, 2001).

Yue and Rudowicz (2002) studied the 489 undergraduates in Beijing, Guangzhou, Hong Kong and Taipei about their nomination of most creative Chinese people in history and in modern times. Results revealed that politicians were nominated by all four samples as being the most creative individuals in the past and at present. Scientists and inventors ranked second in position. Taken together, they occupy over 90 percent of the total number of nominations. Artists, musicians and businessmen are

rarely nominated. More than half of the reasons given for nominating these people are not directly related to creativity. This finding is attributed to a strong utilitarian view of creativity that lies in Chinese young people's perception of creativity. They are much more concerned with a creator's social influence or contribution in society than with his or her innovativeness in thinking. Besides, this finding also contrasts sharply with the finding that British undergraduates tended to consider accomplished scientists and artists as the stereotypical geniuses (Smith and Wright, 2000). In fact, it has been reported that Chinese people are inclined to judge creativity more in terms of one's contribution to society than in terms of one's distinctiveness in creative thinking (Chan, 1997; Wu, 1996). Implicitly, the Chinese perception of creators can be seen as a merit based evaluation system, such that those who distinguish themselves in meritorious utility of creativity are more likely to be regarded than those who as prototypical figures of creativity than those who distinguish themselves in aesthetic utility of creativity (Yue, 2001).

In contrast, the Indian notion of creativity emphasise relational, social and interpersonal aspect rather than cognitive, analytical and typical utilitarian aspects of creativity. Implicit theories of creativity encompass a dimension of aesthetic taste and imagination and also encompass aspects of inquisitiveness and intuitiveness that has been the integral part of the Indian notion of implicit theories of intelligence (Srivastava and Tripathi, 1995).

Chan and Chan (1999), in their study of Chinese teachers' implicit theories of creativity, noted that their participants also accented cognitive factors, causing them to question the degree to which Chinese teachers' implicit theories of creativity and intelligence overlap. Lim et al. (2000) raised a similar question in an investigation of Koreans' implicit theories of intelligence. Both the studies stand in contrast to the evidence of independence of Americans' implicit theories of wisdom, creativity and intelligence (Sternberg, 1985, 1990), indicating that this may be the result of cross-cultural variation related to creativity.

The difference between factors identified between the male and female student's conceptions in present study is also consistent with findings of West and other

traditional cultures of Asia. These differences can be related mainly, to social and cultural factors, with regard to the role of men and women in the Indian society and perhaps in other similar cultures (Lubart, 1999).

The result of this study offers empirical support for the notion that part of the Indian implicit concept of creativity is notably different from the Western and other Asian concept. Therefore, a caution should be exercised when interpreting results of Western creativity tests employed to measure creativity among Indians.

CHAPTER-5

SUMMARY AND CONCLUSION

5.1 The Study

The present study attempts to understand the conceptualisation of notion of creativity among Indian students from Social-Psychological perspective. The present study explores the structure and content of student's conception of creativity and also seeks to understand in what way the Indian notion of creativity is different from the prevalent Western and other Asian conceptions of creativity .

5.2 Objectives

The objectives of the study were as follows:

1) What is the notional understanding of the term creativity among the Indian students.

2) How the Indian notion of creativity is different or similar to other Asian and Western conceptions of creativity.

5.3 Research Design

In order to study the above stated hypotheses, both exploratory and descriptive research designs were used. In the first phase of the study data was collected through open-ended questionnaire to list out the behaviours that are characteristic of creativity. In the second phase of the study questionnaire was developed and the data were collected and analysed to find out the structure of the Indian students conception of creativity.

5.4 Sample

Incidental sampling was done for the purpose of the research study. For the first phase of the study the sample consisted of 290 students from graduate and post graduate programmes of Allahabad University. The sample consisted of 129 female

students and 121 male students. In the total sample of 290, 168 students were graduate and 122 were postgraduate students.

For the second phase of the study the sample consisted of 205 graduate and post-graduate students from Allahabad University. The sample consisted of 116 male and 89 female students from different backgrounds. Because of the paucity of the time incidental sampling technique was used to identify the sample from the University for the present Study.

5.5 Tools

In the initial phase, data were collected through open-ended questionnaire. The subjects were asked to list whatever behaviour they could think of that were characteristic of an ideal creative person. On the basis of this, behaviours were identified and the questionnaire for final data collection was developed.

5.6 Data Analysis

The data were analysed using both quantitative and qualitative tools. The ratings were factor analysed using correlation coefficients as input in to principal component analysis, followed by Varimax rotation of factorial axes with Kaiser Normalisation. In the second section, the researcher tried to compare and contrast the findings of the present study with already existing studies in the field of implicit creativity to find out the differences and similarities in the conceptualisation of notion of creativity among Indian students and other Western and Asian conceptualisations.

5.7 Procedure for data collection & administration of questionnaire

The graduate and post graduate from Allahabad students from Allahabad University were given the general instructions about how to provide response on the questionnaire. The data were collected on the 5-point scale ranging from 1 (low) to very high (5).

5.8 Findings

On the basis of the analysis and discussion carried out in Chapter 4, following findings and conclusions are enumerated:

1) Indian student's conception of creativity primarily included four factors which are tentatively named as 'sociable', 'leadership', 'unconventional personality orientation', and 'task persistence'. This reveals that the Indian notion of creativity emphasises relational, social and interpersonal aspects rather than cognitive, analytical and typical utilitarian aspects of creativity. Thus it can be said that the notion of creativity of Indian students are more or less social and relational in nature. It also confirms the values and preference of the Indian social milieu which put forth traditional collectivist spirit for the enhancement of the creative potential.

2) The factors that underlie the male students notion of creativity are 'sociability and social responsibility', 'unconventional personality orientation', 'manipulative' and 'independence'. Whereas, a slightly different factor structure emerged in the case of female students. The analysis that emerged in the factor are 'leadership', 'sociable', 'openness', and 'perceptive'. This revealed the differences in the notion of creativity among the male and female students. The difference could be attributed to their differential socialisation, the degree of authoritarianism in the sociocultural system and the experience of freedom and independence, which affect the promotion of creative thinking.

5.9 Implications of the study

The present study is an attempt to study the creativity from the social psychological perspective. Thus the study helps to understand the notion of creativity in Indian context more comprehensively and holistically. The study provides an insight into the world of the graduate and post graduate students and helps to understand nature and content of creativity in Indian context.

Implicit and explicit theories of creativity are actually theories of different things. Implicit theories tell us about people's views of what creativity is. It also tells us what is being valued and emphasised in a society and who according to people is a creative person. This aspect is not emphasised in formal or explicit theories of creativity. Therefore none of the currently available explicit theories reflects fully cultural conception of creativity. Thus there is a gap between these two paradigms. The present study also finds this lacuna and shows that the Indian student's notion of creativity is quite different. Indian students emphasised traits which are more social and relational in nature which is in contrasts to the findings of studies done in West and also the studies done in India using Western model of creativity. Most of the studies done in India are based on the theories and tests developed in West. Since our educational is based and structured on the Western model some of these studies did prove to have some prediction power. But it never reflected the needs and aspirations of the society. Laying down of curriculum goals and outlines are guided by the Western understanding of creativity and intelligence. This explains the gap between what education aims at and what the society values and needs.

The present study reveals that the Indian students conception of creativity emphasise more on social and relational aspects which are quite different from the prevalent Western notions of creativity. This finding warns us to be careful while using and interpreting the results of the western instruments in the Indian context. The study clearly tells us that what is emphasised in Indian culture is not the cognitive aspects only but the social and relational skills. These two traits are probably more desirable traits so far the maintenance and development of a multicultural society like ours is concerned. Therefore the education system should not only emphasise the cognitive and intellectual growth but also focus on development of social skills and collectivist ethos. In a pluri-cultural society like ours unless the gaps between what the society emphasises and needs and what the education system aims at is bridged, the society may witness more conflicts both at the individual and group levels and may disintegrate. Ideally, in any society, the explicit theory of any concept or phenomenon should be developed or at least be based on the implicit understandings of the concepts by the people. Any organised system, be it education or anything else, should derive its goal or model from the implicit theories. But in the areas of creativity literature and

defining educational goals in India, these processes unfortunately could not be followed. Unless the gaps between societal values and educational goals are bridged the society will witness more conflicts. This study provides ample rationale for reorienting our educational goals in the line of its people's understanding of various concepts and phenomena including creativity.

The findings that female students emphasise different traits than male students in an ideally creative person warns us to treat creativity as a gender free concept. In India the large section of school teachers are women. Their implicit theory of creativity could be guiding their behaviours such as what traits they emphasise, what they expect from the students, whom they regard creative etc. Therefore it is important to understand the notional understanding of creative person about females.

5.10 Limitations of the study & suggestions for further research

The present study has used incidental sampling and is conducted on a small sample. Sample is selected from a single city. Thus the findings of the study could not be generalised on the whole population. A larger sample by taking stratified random sampling design would have allowed generalising the findings for the larger population. Multi-centric studies could be conducted in different regions to achieve more comprehensive understanding.

The study sampled only graduate and post graduate students from Allahabad University. As a result the sample failed to represent populations in other parts of India. So future studies should try to recruit more diverse samples from India. It would be particularly interesting to examine how common people living in rural areas view creativity as compared with those living in urban areas. Further research will also benefit from including people of various age, gender, education, economic status, and occupational characteristics. It will verify if the criteria (factors) for creativity, as demonstrated in the present study, could be universally applicable to Indians. Present study describes the views held by Indian students on creativity rather than explains them. This weakness, however, seems to be inherent in most of the studies done on implicit theories (Sternberg, 1985).

Another significant limitation of this study is that implicit theories of creativity change over the entire life span. The work of Csikszentmihalyi and Robinson (1985), Gruber (1985), shows changes over life span in the nature of creativity. Hence the present result may apply readily only to early adulthood. The study is fixed at a moment in time. Conceptions of constructs such as creativity may change over the years, so that a study done at one time can be confidently interpreted as accurately reflecting implicit theories only for the time period in which it was done.

The explanations of the obtained results were tentative, which if translated into empirical language may provide some vantage points to the future research. The future researches could be carried out to investigate what social, political, or educational values are attached to such a social view of creativity and explore implications of such a social view of creativity for educational practices in Indian culture.

Since these factors are tentative further researches could be carried out to formalise these factors. Studies could also be carried out to examine the predictive power of this theory in our formal education system. This can also be contrasted with the predictive power of the explicit theories for our educational system.

BIBLIOGRAPHY

Akinboye, J. (1982). Correlates of testing time, age and sex in the Nigeriens' performance on the Torrance Test of Creativity. *Journal of Psychological research*, Vol, 26, pp. 1-5.

Aliotti, N., Britt, M., & Haskins, G. (1975). Relationships among creativity, intelligence, and achievement measures in upward bound students. *Psychology in Schools*, Vol, 12, pp. 423-427.

Barron, F. (1963). Creativity and Psychilogical Health, New York, Van Nortrand.

Barron, F. (1965). The disposition towards originality. *Journal of Abnormal and Social Psychology*, Vol. 51, pp. 478-485.

Barron, F. (1965). The Psychology of Creativity, Holt Reinhart and Winston.

Barron, F. (1968). Creativity and Personal Freedom. New York: Van Nostrand.

Barron, F. (1969). Creative person and creative process, New York: Holt.

Bartlett, F. (1958). Thinking: An experimental and social study. London: Allen & Unwin.

Bartlett, Frederick. (1958) Thinking: An experimental and social study. New York: Basic Books.

Bruner, J. (1962). The conditions of creativity. In H. Gruber, G. Terrell, & M. Wertheimer (ed.), Contemporary approaches to creative thinking (pp. 1-30). New York: Atherton Press.

Bruner, J. S. (1962). In guiding creative talent by Torrence. Prentice Hall of India Private Ltd., New Delhi.

Chan, D. W., & Chan, L. (1999). Implicit theories of creativity: Teachers' perception of student characteristics in Hong Kong. *Creativity Research Journal*, 12, 185-195.

Chan, J. (1997). Creativity in the Chinese culture. In J. Chan, R. Li, & J. Spinks (Eds.), Maximizing potential: Lengthening and strengthening our stride. Proceedings of the 11th World conference on Gifted and Talented children (pp. 212-218). Hing Kong: The University of Hong Kong, Social Sciences Research Centre.

Chauhan, N. S. & Tiwari, G. (1974). Manual for creativity test: Agra psychological Research Cell, Tiwari Kothi Belanganj, pp. 1-12.

Chauhan, N. S. (1979). Second stratum personality factors, sex and age as correlates of originality. *Indian Psychological Review*, Vol, 14, pp. 16-21.

Christensen, P. R. & Guilford, J. P., Merrifield, P. R. & Wilson, R. C. (1960). Alternate Uses. Beverly Hills, California: Sheridan Psychological Services

Christie, T. (1970). Environmental factors in creativity. *Journal of Creative Behaviour*, Vol, 4, pp. 13-17.

Croce, B. (1992). The Aesthetics as the Science of Expression and of the Linguistics in general. Cambridge University Press.

Cropley, A. J. (1966). Creativity and intelligence. *British Journal of Psychology*, Vol. 36, pp. 259-266.

Csikszentmihalyi, M. (1988). Society, culture and person: A system view of creativity. In R. J. Sternberg (Ed.), *The nature of creativity* (pp. 325-339). New York: Cambridge University Press.

Csikszentmihalyi, M., & Robinson, R. (1985). Culture , time, and the development of talent. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness.* New York: Cambridge University Press.

Drevdahl, J.E. (1956). Factors of importance for creativity. *Journal of Clinical Psychology.* Vol.12, pp. 21-26.

Dube, S. C. (1990). Indian Society. National book trust, New Delhi, India.

Dunn, J. A., Zhang, X. Y., & Ripple, R. E. (1988). Comparative study of Chinese and American performance on divergent thinking tasks. *New Horizans*, Vol, 29, pp. 7-20.

Dutta , N. K. (1976). Creative Potential and Education. Indian Book Agency, Ambala, India.

Dweck, C., & Bempechat, J. (1983). Children's theories of intelligence: consequences for learning. In S. Paris, & G. Olson (Eds.), *Learning and motivation in classroom* (pp. 239-256). N. Wiley.

Eiduson, B. T. (1957). Artists and non artists: A comparative study. Doctoral Dissertation, University of California.

Eysenck, H. J. (1993). Creativity and personality: Suggestions for a theory. *Psychological Inquiry*, Vol, 4, 147-178.

Freud, S. (1908/1970). Creative writers and daydreaming. In P.E. Vernon (ed.), Creativity (pp.126-155). Middlesex, England, Penguin Books Ltd. (Original work published in 1908).

Freud, S. (1968/1924). A general Introduction to Psychoanalysis (J. Riviere, Trans.). New York, Washington square press, Inc. (Original work published in 1924).

Fryer, M., & Collings, J. A. (1991). British teachers' view of creativity. *Journal of Creative Behavior*, Vol. 25, pp. 75-81.

Gakhar, S. (1975). Identification of Creative Talents. New Delhi, NIPCCD.

Getzel, J. W. and Jackson, P. W. (1962). Creativity and Intelligence: Exploration with Gifted Students, New York, John Wiley.

Getzels, J. W. & Jackson, P. W. (1958). The meaning of giftedness an examination of an expanding cincept, *Phi. Delta Kappan*, Vol. ,pp. 74-75.

Getzels, J. W. & Jackson, P. W. (1959). The highly intelligent and the highly creative adolescent. A summary of some research findings, in C. W. Taylor (Ed.). The third University of Utah Research Conference on the Identification of Creative Scientific Talents, Salt Lake City, University of Utah press, pp. 46-57.

Getzels, J. W. & Jackson, P. W. (1962). Creativity and Intelligence, Exploration with Gifted students, New York, John Wily.

Golann, S. E. (1962). Psychological study of creativity. *Psychological Bulletin*,Vol, 60, pp. 543-565.

Gopal, A. K. (1975). Certain differentiating personality variables of creative and non creative sciences and engineering students, *Unpublished Ph.D. Thesis*, Education Kurukshetra University.

Gopal, A. K. (1975). Certain differentiating personality variables of creative and non creative science and engineering students, Unpublished Ph.D. Thesis, Kurukshetra University, India.

Gough, H. (1975). A new scientific uses test and its relationship to creativity in research. *Journal of Creative behaviour*, Vol. 9, pp. 245-252.

Goyal, R. P. (1971). Creativity and school climate: An Exploratory study. *Journal of Psychological Research,* Vol, 12, pp. 23-28.

Gruber, H. E. (1985). The Self-construction of the Extraordinary. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness.* New York: Cambridge University Press.

Guilford, J. P. (1956). Fundamental Statistic in Psychology and Education. Third (Ed.) New York, McGraw Hill.

Guilford, J. P. (1956). The structure of intellect. *Psychological Bulletin*, Vol, 53, pp. 267-293.

Guilford, J. P. (1957). Creative ability in arts, *Psychological Review*, Vol. 64, pp. 110-118.

Guilford, J. P. (1967). The Nature of Human Intelligence. New York: Mc Graw-Hill.

Gupta, A. K. (1977) Construction and standardization of MEIR tests of creativity for Indian children- Unpublished research papers, Jammu: Model Institute of Education and Research.

Hart, H. H. (1950). The integrative functions of creativity, *Psychiatric Quarterly*, Vol. 24, pp. 1-16.

Helode, R. (1986). Expressed characteristics of creative persons. *Psycholingua*, Vol, 16, pp. 107-117.

Helsen, R. (1996). In search of the creative personality. *Creativity Research Journal,* Vol, 9, pp. 295-306.

Helson, P. (1966). Personality of women with imaginative and artistic interests, the role of masculinity, originality and other characteristics in their creativity, *Journal of Personality*, Vol. 34, pp. 1-25.

Holland, J. L. (1961). Creative and academic performance among talented adolescents. *Journal of Educational Psychology*, Vol. 52, pp.136-147.

Hota, N. (1986). School achievement and personality: a TAT study. *Indian Journal of Psychology*, Vol, 61, pp. 42-47.

Hussain, M. G. (1974). Cultural roles, sex differences and creativity: Educational trends, *Psychological studies*, Vol. 19, pp. 234-236.

Irvine, S. H. (1970). Affects and constructs- a cross-cultural check on theories of intelligence. *Journal of Social Psychology*, Vol, 80, pp. 23-30.

Jarial, G. S., & Sharma, A.K. (1977). Creativity and its Components as Affected by Intelligence, Personality and their Interaction. In Tiwari, G. & Pal, R. (Eds.), *Status of Indian Researches in Creativity*. Agra Psychological Research Cell, Agra.

Kakar S. (1979). Indian childhood: Cultural Ideals and Social Reality. Delhi: Oxford University Press.

Khaleefa, O. H., Erdos, G., & Ashria, I. H. (1996). Creativity in an indigenous, Afro-Arab Islamic culture: The case of Sudan. *Journal of Creative Behavior*, Vol, 30, pp. 268-282.

Kneller, G. F. (1965). The Art and Science of Creativity. New York: Holt, Rinehart and Winston.

Koestler, A. (1964). The Art of Creation, New York, Delta.

Kumar, A. (1981). Personality identification of high and low creative at age 13 or older. *Journal of Creative Behaviour*, Vol, 15, pp. 270-273.

Lawshe, C. H. & Harris, D. H. (1960). Manual of instructions: Purdue creativity test. Lafayette, Indiana: Purdue Research Foundation.

Lim, W., & Plucker, J. A. (2001). Creativity through a lens of social responsibility: Implicit creativity theories with Korean samples. *Journal of Creative Behaviour*, Vol, 35, pp. 115-130.

Lim, W., & Plucker, J. A. (2001). Creativity through a lens of social responsibility: Implicit theories of creativity with Korean samples. *Journal of Creative Behaviour*, Vol, 35, pp. 115-130.

Lubart, T. I. (1990). Creativity and cross cultural variation. *International Journal of Psychology*, Vol, 25, pp. 39-59.

Lubart, T. I. (1999). Creativity across cultures. In R. J. Sternberg (ed.). Handbook of Creativity. (Pp. 330-350) NY: Cambridge University Press.

Lynott, D. J., & Woofolk, A. E. (1994). Teachers' implicit theories of intelligence and their educational goals. *Journal of Research and Development in Education*, Vol, 27, pp. 233-264.

Mackinnon, D. W. (1964). The Study of Lives. New York: Atherton Press.

Mallappa, K. R. & Upadhyaya, R. (1977). Creativity and Personality. In Tiwari, G. & Pal, R. (Eds.), Status of Indian Researches in Creativity. Agra Psychological Research Cell, Agra.

Mar'I, S. (1983). Creativity in Arab culture: Two decades of research. *Journal of Creative Behaviour*, Vol, 16, 227-238.

Maslow, A. H. (1954). Motivation and Personality. New York, Harper and Row.

Mckinnon, D. W. (1969). The Nature & Nature of Creative Talent, *American Psychology*, Vol, 17, pp. 484-95.

Mednick, S. (1962). The associative basis of creative process. *Psychological Review*, Vol, 69, pp. 220-232.

Mednick, S. A. (1962). The associative basis of creative process. *Psychological Review*, Vol. 69, pp. 220-232.

Mehdi, B. (1973). Non-verbal tests for creative thinking: A review. *Journal of Psychology*. Vol. 58, pp. 205-214.

Mehdi, B. (1974). Non verbal test of creative thinking. *Journal of Psychology*, Vol, 58, pp. 205-214.

Montgomery, D., Bull, K. S., & Baloche, L. (1993). Characteristics of the creative person. *American Behavioural Scientist*, Vol, 37, pp. 68-78.

Montuori, A., & Purser, R. E. (1995). Deconstructing the lone genius myth: Toward a contextual view of creativity. *Journal of Humanistic Psychology*, Vol, 35, pp. 69-112.

Neisser, U. (1979). The Concept of Intelligence. In R. J. Sternberg & D. K. Detterman (ed.), Human Intelligence: Perspectives on its theory and Measurement (pp. 179-189). Norwood, NJ: Ablex.

Nevo, B., & Khader, A. M. B. (1995). Cross-cultural, gender, and age differences in Singaporean mothers' conception of children's intelligence. *Journal of Social Psychology*, Vol. 135, pp. 509-518.

Newell, Shaw, & Simon, (1962). The Process of Creative Thinking. In H. Gruber, G. Terrell, & M. Wertheimer (ed.) (pp. 63-119) Contemporary approaches to creative thinking. New York, Atherton Press.

Paramesh, C. R. (1971) Adoptation of Wallach and Kogan creativity instruments and relationship between creativity and intelligence. *Indian Journal of Psychology*, Vol, 48, pp. 1-11.

Paramesh, C. R. (1973). Creativity and Personality. Jantha Book Company, Madras, India.

Paramesh, C. R., & Upadhyaya, R. (1970). Value Orientations of Creative Persons. *Psychological studies*, Vol, 15, pp. 108-112.

Parmesh, C. R.(1971). Adaptation of Wallach and Kogan creativity instruments and relationship between creativity and intelligence. *Indian Journal of Psychology*, Vol. 48 (1), pp. 1-11.

Passi, B. K. (1973). An exploratory study of creativity and its relationship with intelligence and achievement in school subjects at higher secondary stage. Unpublished Ph.D. Thesis, Punjab University, India.

Patel, M. M., & Parikh, J. (1984). Creativity and academic achievement. *Indian Journal of Psychology*, Vol, 59, pp. 41-43.

Peavy, R. (1979). Therapy and creativity. *Journal of Creative Behaviour*, Vol, 21, pp. 123-125.

Peck, R. F. (1958). What makes a man creative? *Personal*, Vol, 35, pp. 18-23.

Pestonjee, D. M., & Usmani, H. (1982). Creativity in relation to alienation ego strength and intelligence. *Journal of Creative Behaviour*, Vol, 15, pp. 29-32.

Plucker, J. A. (2000). What's in a name? Young adolescents' implicit conceptions of invention. Unpublished paper.

Plucker, J. A., & Renzulli, J. S. (1999). Psychometric approaches to the study of human creativity. In R. J. Sternberg (ed.), Handbook of Creativity (Pp. 35-61). New York. Cambridge University Press.

Plucker, J. A., & Runco, M. A. (1998). The death of creativity measurement has been greatly exaggerated: current issues, recent advances, and future directions in creativity assessment. *Roeper Review*, Vol. 21, pp. 36-39.

Raina, M. K. (1968). Some personality correlates of creativity in Indian students. Unpublished Ph.D. Thesis, University of Rajasthan, India.

Raina, M. K. (1970). Creativity and teaching success. *Psychological reports*, Vol. 26, pp. 65-70

Raina, M. K., Kumar, G., & Raina, V. K. (1980). A cross-cultural study of parental perception of the ideal child. *Creative Child and Adult Quarterly*, Vol, 5, pp. 234-241.

Rao, A. G. (1973). Cultivating creativity, proceedings of seminar on creative Engineering Design, Madras.

Rawat, M. S., & Agrawal, S. (1977). A study on creative thinking. *Indian Psychological Review*, Vol, 14, pp. 36-40.

Raychaudhuri, M. (1963). Creativity and personality. *Indian Psychological Review*, Vol, 2, pp. 45-47.

Raychaudhuri, M. (1968). On artistic personality. In M. K. Raina, Creativity researches in India. *Journal of Creative Behaviour*, Vol, 3, pp. 1-3.

Rechardson, A. G. (1986). Gender difference in creative thinking. *Journal of Creative Behaviour*, Vol, 20, pp. 147-149.

Rees, M. E. & Goldman, M. (1961). Some relationship between creativity and personality. *Journal of General Psychology*, Vol, 6, pp. 145-61.

Rehman, Q., & Hussain, M. G. (1973). Cultural roles, sex differences and creativity. *Psychological studies*, Vol, 19, pp. 23-25.

Roe, A. (1951). Artists and their work. *Journal of Personality*, Vol, 15, pp. 1-40.

Rogers, C. (1954). Towards a theory of creativity. ETC: A review of general semantics, Vol. 11, pp. 249-260.

Rudowicz, E., & Hui, A. (1996). Creativity and a creative person: Hong Kong perspective. *The Australasian journal of Gifted Education*, Vol, 5, pp. 5-11.

Rudowicz, E., & Hui, A. (1997). The creative personality: Hong Kong perspective. *Journal of Social Behavior and Personality*, Vol. 12, pp.139-148.

Rudowicz, E., & Yue, X. D. (2000). Concepts of creativity: similarities and differences among mainland, Hong Kong and Taiwanese Chinese. *Journal of Creative Behavior*, Vol. 34, pp. 275- 192.

Runco, M. A. (1984). Teachers'judgement of creativity and social validation of divergent thinking tests. *Perceptual and Motor Skills*, Vol. 59, pp. 711-717.

Runco, M. A. (1989). Parents' and teachers' ratings of the creativity of children. *Journal of Social behavior and Personality*, Vol. 4, pp. 73-83.

Runco, M. A., & Bahleda, M. D. (1986). Implicit theories of artistic, scientific, and everyday creativity. *Journal of Creative Behavior*, Vol. 20, pp. 93-98.

Runco, M. A., & Bahleda, M. D. (1987). Implicit theories of artistic, scientific and everyday creativity. *The Journal of Creative Behaviour*, Vol, 20, pp. 93-98.

Ruth , J., & Birren, J. (1985). Creativity in adulthood and old age: Relations to intelligence, sex and mode of testing. *International Journal of Behavioural Development*, Vol, 8, pp. 99-109.

Schmidit, C., & Senior, J. (1986). An investigation of the relationship among music audition, musical creativity, and cognitive style. *Journal of Research in Music Education*, Vol, 34, pp. 160-172.

Serena, W. (1968). Differences between intelligence and creativity: some speculation on the role of environment. *Journal of Creative Behaviour*, Vol, 2, pp. 97-99.

Sharma, K. N. (1972). Creativity as a function of intelligence, *Psychological Studies*, Vol. 1, pp. 64-67.

Shukla, P. (1982). A study of creativity in relation to sex locality and school subjects. *Indian Education Review*, Vol, 17, pp. 32-35.

Simonton, D. K. (1992). The social context of career success and course for 2,026 scientists and inventors. *Personality and Social Psychology Bulletin*, Vol, 18, pp. 452-463.

Simpson, R. M. (1922). Creative imagination. *American Journal of Psychology*, Vol, 33, pp. 234-243.

Singh, R. B. (1977). Creativity as related to intelligence, achievement and security-insecurity. *Indian Psychological Review*, Vol, 14, pp. 1-4.

Singh, R. P. (1978). Education for creativity. *Indian Psychological review*, Vol, 14, pp. 67-68.

Smith, C. D., & Wright, T. (2000). Perceptions of genius: Einstein, lesser mortals and shooting stars. *Journal of Creative Behaviour*, Vol, 34, pp. 151-164.

Spearman, C. (1931). The Creative Mind. New York: Apple ton-Century Crofts.

Srivastava, A. K., & Tripathi, A. M. (1995). Western and Indian perspectives on intelligence: Some reflections. *Indian Educational Review*, Vol, 30, pp. 31-45.

Stein, M. I. (1953). Creativity and culture. *Journal of Psychology*, Vol, 36, pp. 311-322.

Stein, M. I. (1974). Stimulating Creativity, (Vol. 1). New York: Academic Press.

Sternberg, R. J. (1985). Implicit theories of intelligence, creativity and wisdom. *Journal of Personality and Social Psychology*, Vol. 49(3), pp. 607-627.

Sternberg, R. J. (1985). Implicit theories of intelligence, creativity and wisdom. Journal of Personality and Social Psychology, Vol, 49, pp. 607-626.

Sternberg, R. J. (Ed.) (1988). The nature of creativity: Contemporary psychological perspective (pp. 125-147). Cambridge: Cambridge University Press.

Sternberg, R. J., & Lubart, T. I. (1991). An investment theory of creativity and its development. *Human Development*, Vol, 34, pp. 1-31.

Sternberg, R. J., Conway, B. E., Ketron, J. L., & Bernstein, M. (1981). People's conceptions of intelligence. *Journal of Personality and Social Psychology*, Vol. 41, pp. 37-55.

Stipek, D., & Gralinski, J. H. (1996). Children's beliefs about intelligence and school performance. *Journal of Educational Psychology*, Vol,88, pp. 397-407.

Tagore, R. N. (1962). Creative Unity (Indian Ed.), London: Macmillion.

Tanwan, R. S. (1977). Measurement of creativity thinking and their use in India. *Indian Psychological review,* Vol, 14, pp. 59-62.

Torrance, E. P. (1959) Sex role identification and creativity, and exploratory study. Research memorandum BER-59-10 Minneopolis, University of Minnesota.

Torrance, E. P. (1965). Gifted Children in the Class Room, New York, MacMillon.

Torrance, E. P. (1965). Rewarding Creative Behaviour: Experiments in Class Room Creativity. Englewood Cliff, N J: Prentice Hall.

Torrance, E. P. (1969). Creativity. Sioux Falls, ND: Adapt Press.

Torrence, E. P. (1962). Guiding Creative Talent. Englewood Cliffs, N J: Printice Hall.

Toynbee, A., (1964). Is America neglecting her creative minority? in: Taylor, C.W., (Ed.), Widening horizons in creativity.

Tuli, M. (1982). Sex and regional differences in mathematical creativity. *Indian Educational Review*, Vol, 17, 128-134.

Verma, S. K. (1973). Facts and illusion. I*ndian Journal of Clinical Psychology*, Vol, 17, pp. 1-2.

Vernon, P. E. (Ed.) (1970). Creativity (pp.117-125), Middlesex, England: Penguin Books Ltd.

Walberg, H. J. (1971). Varieties of adolescent creativity and the high school environment. *Exceptional Children*, Vol, 59, pp. 193-198.

Wallach, M. A. & Kogan, N. (1965). Modes of Thinking in Young Children: A study of the Creativity Intelligence Distinction. New York: Holt, Rinehart.

Wallach, M. A. & Kogan, N. (1965). Modes of Thinking in Young Children: A study of Creativity-Intelligence Distinction, New York, Holt.

Weisberg, P. S., & Springer, K. J. (1961). Environmental factor in creative function of gifted children. *Archieves of General Psychiatry*, Vol, 5, pp. 554-564.

Welch, L. (1960). Ideational reorganization of ideas in creative and non-creative thinking. *Annals of the New York academy of sciences*, Vol. 91, Part. 1, New York.

Wertheimer, M. (1959). Productive Thinking. New York: Harper and Boothers Publishers.

Wonder, J. & Blake, J. (1992). Creativity east and west: Intuitive logic. *Journal of Creative Behaviour*, Vol, 26, pp. 172-185.

Wood, W., Polek, D., & Aiken, C. (1985). Sex difference in group task performance. *Journal of Personality and Social Psychology*, Vol, 48, pp. 63-71.

Wu, W. T. (1996). Many faces of creativity. In S. Cho, J. H. Moon, & J. O. Park (Eds.), Selected proceedings of the 3rd Asia-Pacific conference on Giftedness (pp. 123-128). Seoul, Korea.

Yamamoto, K. (1964). Role of creative thinking and intelligence in high school achievement, *Psychological Reports* Vol.14, pp. 123-127.

Yamamoto, K. (1965). Role of creative thinking and intelligence in high school achievement. *Psychological reports*, vol, 14, pp. 783-789.

Yue, X. D. (2001). Meritorious evaluation bias: How Chinese undergraduates perceive and evaluate Chinese and foreign creators. Paper presented ar the 9th national conference of Chinese Psychological society, Nov. 4-8, 2001, Guangzhou, China.

Yue, X. D., & Rudowicz, E. (2002). Perception of the most creative Chinese by undergraduates in Beijing, Guangzhou, Hong Kong, and Taipei. *Journal of Creative Behaviour*, Vol, 36 pp. 88-104

Zarengar, Z. (1981). Education and psychological measurement. *Journal of creative Behaviour*, Vol, 15 pp. 498-51.

APPENDICES

ID No. :

Sex : Male / Female

Age :

Education :

Father's Education :

Mother's Education :

Family Background : Urban/Rural

Please list down the behaviours you can think of that is characteristic of an ideally creative passion.

कृपया उन सभी व्यवहारों को सूची बद्ध करें जो आपके अनुसार एक आदर्श सृजनात्मक व्यक्ति में होते हैं।

QUESTIONNAIRE

Name (Optional) :
Age (In Years) :
Sex : Male ( ) Female ( )
Education :

The aim of the fallowing study is to find out what the student thinks and feel about the creative behaviour. Given below are some statements. Each statement has five alternatives:-

Write '5' If the behaviour is **very highly** characteristic of an ideally creative person.

Write '4' If the behaviour is **highly** characteristic of an ideally creative person.

Write '3' If the behaviour is **moderately** characteristic of an ideally creative person.

Write '2' If the behaviour is **somewhat** characteristic of an ideally creative person.

Write '1' If the behaviour is **low** characteristic of an ideally creative person.

Please read each statement carefully and then indicate your choice by writing the appropriate number against each statement. If you feel that given choices do not indicate your opinion fully, then write the option (number), which approximate your opinion most closely.

An Ideal Creative Person –

1. ___thinks differently from others.
2. ___is very patient.
3. ___thinks in a logical and scientific way.
4. ___is good at leading others.
5. ___is imaginative.
6. ___is very intelligent.
7. ___manages his/her time well.
8. ___is very independent.
9. ___does not pay attention to other's criticism.
10. ___is very sensitive.
11. ___is flexible.
12. ___is thoughtful.
13. ___uses old ideas to find new ideas.

14. ___is a loner.
15. ___is introverted.
16. ___has good communication skills.
17. ___is responsible.
18. ___sees possibility in failures.
19. ___has good social skills.
20. ___is helpful to others.
21. ___do not make compromises.
22. ___has a long attention span.
23. ___adapts well to different situations.
24. ___is self-confident and comfortable.
25. ___has lots of ideas.
26. ___is unique and original.
27. ___has a wide area of knowledge
28. ___is headstrong.
29. ___understands well, decisive, and insightful.
30. ___has lots of divergent ideas.
31. ___does not limit oneself to the society's standards.
32. ___is friendly.
33. ___is determined toward his/her work.
34. ___has a high self esteem
35. ___is emotional.
36. ___loves to take risk.
37. ___is perfectionist never satisfied with his/ her works.
38. ___is indifferent to other's opinions.
39. ___has ability to make quick decisions.
40. ___has a good moral character.
41. ___is very observant.

Correlations

		TF1	TF2	TF3	TF4	TFT
TF1	Pearson Correlation	1.000	.604**	.253**	.269**	.751**
	Sig. (2-tailed)	.	.000	.000	.000	.000
	N	205	205	205	205	205
TF2	Pearson Correlation	.604**	1.000	.344**	.296**	.821**
	Sig. (2-tailed)	.000	.	.000	.000	.000
	N	205	205	205	205	205
TF3	Pearson Correlation	.253**	.344**	1.000	.584**	.687**
	Sig. (2-tailed)	.000	.000	.	.000	.000
	N	205	205	205	205	205
TF4	Pearson Correlation	.269**	.296**	.584**	1.000	.674**
	Sig. (2-tailed)	.000	.000	.000	.	.000
	N	205	205	205	205	205
TFT	Pearson Correlation	.751**	.821**	.687**	.674**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.
	N	205	205	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		TF1	X20	X2	X16	X17	X32
TF1	Pearson Correlation	1.000	.719**	.553**	.627**	.772**	.637**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000
	N	205	205	205	205	205	205
X20	Pearson Correlation	.719**	1.000	.227**	.293**	.495**	.352**
	Sig. (2-tailed)	.000	.	.001	.000	.000	.000
	N	205	205	205	205	205	205
X2	Pearson Correlation	.553**	.227**	1.000	.077	.310**	.190**
	Sig. (2-tailed)	.000	.001	.	.274	.000	.006
	N	205	205	205	205	205	205
X16	Pearson Correlation	.627**	.293**	.077	1.000	.450**	.274**
	Sig. (2-tailed)	.000	.000	.274	.	.000	.000
	N	205	205	205	205	205	205
X17	Pearson Correlation	.772**	.495**	.310**	.450**	1.000	.306**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000
	N	205	205	205	205	205	205
X32	Pearson Correlation	.637**	.352**	.190**	.274**	.306**	1.000
	Sig. (2-tailed)	.000	.000	.006	.000	.000	.
	N	205	205	205	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		TF2	X27	X40	X4	X7	X19
TF2	Pearson Correlation	1.000	.644**	.614**	.586**	.555**	.449**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000
	N	205	205	205	205	205	205
X27	Pearson Correlation	.644**	1.000	.314**	.295**	.269**	.220**
	Sig. (2-tailed)	.000	.	.000	.000	.000	.002
	N	205	205	205	205	205	205
X40	Pearson Correlation	.614**	.314**	1.000	.282**	.273**	.157*
	Sig. (2-tailed)	.000	.000	.	.000	.000	.024
	N	205	205	205	205	205	205
X4	Pearson Correlation	.586**	.295**	.282**	1.000	.160*	.110
	Sig. (2-tailed)	.000	.000	.000	.	.022	.115
	N	205	205	205	205	205	205
X7	Pearson Correlation	.555**	.269**	.273**	.160*	1.000	.107
	Sig. (2-tailed)	.000	.000	.000	.022	.	.126
	N	205	205	205	205	205	205
X19	Pearson Correlation	.449**	.220**	.157*	.110	.107	1.000
	Sig. (2-tailed)	.000	.002	.024	.115	.126	.
	N	205	205	205	205	205	205
X6	Pearson Correlation	.475**	.221**	.146*	.160*	.256**	.135
	Sig. (2-tailed)	.000	.001	.036	.022	.000	.054
	N	205	205	205	205	205	205
X20	Pearson Correlation	.621**	.324**	.323**	.281**	.252**	.143*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.041
	N	205	205	205	205	205	205
X23	Pearson Correlation	.495**	.237**	.192**	.281**	.111	.196**
	Sig. (2-tailed)	.000	.001	.006	.000	.114	.005
	N	205	205	205	205	205	205

Correlations

		X6	X20	X23
TF2	Pearson Correlation	.475**	.621**	.495**
	Sig. (2-tailed)	.000	.000	.000
	N	205	205	205
X66	Pearson Correlation	.221**	.324**	.237**
	Sig. (2-tailed)	.001	.000	.001
	N	205	205	205
X67	Pearson Correlation	.146*	.323**	.192**
	Sig. (2-tailed)	.036	.000	.006
	N	205	205	205
X9	Pearson Correlation	.160*	.281**	.281**
	Sig. (2-tailed)	.022	.000	.000
	N	205	205	205
X12	Pearson Correlation	.256**	.252**	.111
	Sig. (2-tailed)	.000	.000	.114
	N	205	205	205
X28	Pearson Correlation	.135	.143*	.196**
	Sig. (2-tailed)	.054	.041	.005
	N	205	205	205
X11	Pearson Correlation	1.000	.186**	.050
	Sig. (2-tailed)	.	.007	.476
	N	205	205	205
X3_	Pearson Correlation	.186**	1.000	.179*
	Sig. (2-tailed)	.007	.	.010
	N	205	205	205
X33	Pearson Correlation	.050	.179*	1.000
	Sig. (2-tailed)	.476	.010	.
	N	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		TF3	X21	X6	X10	X37	X23
TF3	Pearson Correlation	1.000	.595**	.579**	.609**	.629**	.254**
	Sig. (2-tailed)	. .	.000	.000	.000	.000	.000
	N	205	205	205	205	205	205
X21	Pearson Correlation	.595**	1.000	.181**	.214**	.243**	-.167*
	Sig. (2-tailed)	.000	.	.010	.002	.000	.017
	N	205	205	205	205	205	205
X6	Pearson Correlation	.579**	.181**	1.000	.239**	.184**	.050
	Sig. (2-tailed)	.000	.010	.	.001	.008	.476
	N	205	205	205	205	205	205
X10	Pearson Correlation	.609**	.214**	.239**	1.000	.184**	-.050
	Sig. (2-tailed)	.000	.002	.001	.	.008	.472
	N	205	205	205	205	205	205
X37	Pearson Correlation	.629**	.243**	.184**	.184**	1.000	.004
	Sig. (2-tailed)	.000	.000	.008	.008	.	.950
	N	205	205	205	205	205	205
X23	Pearson Correlation	.254**	-.167*	.050	-.050	.004	1.000
	Sig. (2-tailed)	.000	.017	.476	.472	.950	.
	N	205	205	205	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		TF4	X11	X22	X23	X28	X37
TF4	Pearson Correlation	1.000	.586**	.637**	.533**	.588**	.567**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000
	N	205	205	205	205	205	205
X11	Pearson Correlation	.586**	1.000	.232**	.218**	.122	.094
	Sig. (2-tailed)	.000	.	.001	.002	.083	.178
	N	205	205	205	205	205	205
X22	Pearson Correlation	.637**	.232**	1.000	.205**	.220**	.285**
	Sig. (2-tailed)	.000	.001	.	.003	.002	.000
	N	205	205	205	205	205	205
X23	Pearson Correlation	.533**	.218**	.205**	1.000	.208**	.004
	Sig. (2-tailed)	.000	.002	.003	.	.003	.950
	N	205	205	205	205	205	205
X28	Pearson Correlation	.588**	.122	.220**	.208**	1.000	.165*
	Sig. (2-tailed)	.000	.083	.002	.003	.	.018
	N	205	205	205	205	205	205
X37	Pearson Correlation	.567**	.094	.285**	.004	.165*	1.000
	Sig. (2-tailed)	.000	.178	.000	.950	.018	.
	N	205	205	205	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		MF1	MF2	MF3	MF4	MFT
MF1	Pearson Correlation	1.000	.072	.089	.244**	.669**
	Sig. (2-tailed)	.	.441	.340	.008	.000
	N	116	116	116	116	116
MF2	Pearson Correlation	.072	1.000	.138	.006	.603**
	Sig. (2-tailed)	.441	.	.139	.950	.000
	N	116	116	116	116	116
MF3	Pearson Correlation	.089	.138	1.000	.340**	.528**
	Sig. (2-tailed)	.340	.139	.	.000	.000
	N	116	116	116	116	116
MF4	Pearson Correlation	.244**	.006	.340**	1.000	.550**
	Sig. (2-tailed)	.008	.950	.000	.	.000
	N	116	116	116	116	116
MFT	Pearson Correlation	.669**	.603**	.528**	.550**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.
	N	116	116	116	116	116

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		MF1	X20	X2	X15	X16
MF1	Pearson Correlation	1.000	.424**	.661**	.230*	.596**
	Sig. (2-tailed)	.	.000	.000	.013	.000
	N	116	116	116	116	116
X20	Pearson Correlation	.424**	1.000	.201*	.041	.040
	Sig. (2-tailed)	.000	.	.031	.664	.670
	N	116	116	116	116	116
X2	Pearson Correlation	.661**	.201*	1.000	.050	.197*
	Sig. (2-tailed)	.000	.031	.	.592	.034
	N	116	116	116	116	116
X15	Pearson Correlation	.230*	.041	.050	1.000	-.165
	Sig. (2-tailed)	.013	.664	.592	.	.078
	N	116	116	116	116	116
X16	Pearson Correlation	.596**	.040	.197*	-.165	1.000
	Sig. (2-tailed)	.000	.670	.034	.078	.
	N	116	116	116	116	116
X17	Pearson Correlation	.660**	.059	.373**	-.187*	.540**
	Sig. (2-tailed)	.000	.528	.000	.044	.000
	N	116	116	116	116	116
X32	Pearson Correlation	.484**	.022	.183*	-.169	.244**
	Sig. (2-tailed)	.000	.813	.049	.070	.008
	N	116	116	116	116	116

Correlations

		X17	X32
MF1	Pearson Correlation	.660**	.484**
	Sig. (2-tailed)	.000	.000
	N	116	116
X20	Pearson Correlation	.059	.022
	Sig. (2-tailed)	.528	.813
	N	116	116
X2	Pearson Correlation	.373**	.183*
	Sig. (2-tailed)	.000	.049
	N	116	116
X22	Pearson Correlation	-.187*	-.169
	Sig. (2-tailed)	.044	.070
	N	116	116
X16	Pearson Correlation	.540**	.244**
	Sig. (2-tailed)	.000	.008
	N	116	116
X17	Pearson Correlation	1.000	.249**
	Sig. (2-tailed)	.	.007
	N	116	116
X32	Pearson Correlation	.249**	1.000
	Sig. (2-tailed)	.007	.
	N	116	116

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		MF2	X6	X10	X37	X21	X30
MF2	Pearson Correlation	1.000	.580**	.595**	.651**	.604**	.501**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000
	N	116	116	116	116	116	116
X6	Pearson Correlation	.580**	1.000	.321**	.238*	.193*	.085
	Sig. (2-tailed)	.000	.	.000	.010	.038	.366
	N	116	116	116	116	116	116
X10	Pearson Correlation	.595**	.321**	1.000	.153	.166	.108
	Sig. (2-tailed)	.000	.000	.	.102	.075	.249
	N	116	116	116	116	116	116
X37	Pearson Correlation	.651**	.238*	.153	1.000	.257**	.214*
	Sig. (2-tailed)	.000	.010	.102	.	.005	.021
	N	116	116	116	116	116	116
X21	Pearson Correlation	.604**	.193*	.166	.257**	1.000	.078
	Sig. (2-tailed)	.000	.038	.075	.005	.	.403
	N	116	116	116	116	116	116
X30	Pearson Correlation	.501**	.085	.108	.214*	.078	1.000
	Sig. (2-tailed)	.000	.366	.249	.021	.403	.
	N	116	116	116	116	116	116

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		MF3	X13	X4	X28
MF3	Pearson Correlation	1.000	.596**	.654**	.632**
	Sig. (2-tailed)	.	.000	.000	.000
	N	116	116	116	116
X2	Pearson Correlation	.596**	1.000	.143	.048
	Sig. (2-tailed)	.000	.	.126	.608
	N	116	116	116	116
X9	Pearson Correlation	.654**	.143	1.000	.084
	Sig. (2-tailed)	.000	.126	.	.371
	N	116	116	116	116
X41	Pearson Correlation	.632**	.048	.084	1.000
	Sig. (2-tailed)	.000	.608	.371	.
	N	116	116	116	116

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		MF4	X23	X38	X39
MF4	Pearson Correlation	1.000	.733**	.628**	.615**
	Sig. (2-tailed)	.	.000	.000	.000
	N	116	116	116	116
X33	Pearson Correlation	.733**	1.000	.204*	.276**
	Sig. (2-tailed)	.000	.	.028	.003
	N	116	116	116	116
X64	Pearson Correlation	.628**	.204*	1.000	-.026
	Sig. (2-tailed)	.000	.028	.	.782
	N	116	116	116	116
X66	Pearson Correlation	.615**	.276**	-.026	1.000
	Sig. (2-tailed)	.000	.003	.782	.
	N	116	116	116	116

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		FF1	FF2	FF3	FF4	FFT
FF1	Pearson Correlation	1.000	.535**	.525**	.414**	.814**
	Sig. (2-tailed)	.	.000	.000	.000	.000
	N	89	89	89	89	89
FF2	Pearson Correlation	.535**	1.000	.620**	.148	.868**
	Sig. (2-tailed)	.000	.	.000	166	.000
	N	89	89	89	89	89
FF3	Pearson Correlation	.525**	.620**	1.000	.150	.839**
	Sig. (2-tailed)	.000	.000	.	159	.000
	N	89	89	89	89	89
FF4	Pearson Correlation	.414**	.148	.150	1.000	.281**
	Sig. (2-tailed)	.000	166	159	.	.008
	N	89	89	89	89	89
FFT	Pearson Correlation	.814**	.868**	.839**	.281**	1.000
	Sig. (2-tailed)	.000	.000	.000	.008	.
	N	89	89	89	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		FF1	X20	X4	X30	X39	X40
FF1	Pearson Correlation	1.000	.296**	.601**	.153	.611**	.632**
	Sig. (2-tailed)	.	.005	.000	.152	.000	.000
	N	89	89	89	89	89	89
X20	Pearson Correlation	.296**	1.000	.067	.257*	.101	-.111
	Sig. (2-tailed)	.005	.	.534	.015	.347	.301
	N	89	89	89	89	89	89
X4	Pearson Correlation	.601**	.067	1.000	-.234*	.292**	.363**
	Sig. (2-tailed)	.000	.534	.	.027	.006	.000
	N	89	89	89	89	89	89
X30	Pearson Correlation	.153	.257*	-.234*	1.000	-.177	-.246*
	Sig. (2-tailed)	.152	.015	.027	.	.098	.020
	N	89	89	89	89	89	89
X39	Pearson Correlation	.611**	.101	.292**	-.177	1.000	.447**
	Sig. (2-tailed)	.000	.347	.006	.098	.	.000
	N	89	89	89	89	89	89
X40	Pearson Correlation	.632**	-.111	.363**	-.246*	.447**	1.000
	Sig. (2-tailed)	.000	.301	.000	.020	.000	.
	N	89	89	89	89	89	89
X17	Pearson Correlation	.573**	-.087	.312**	-.027	.239*	.354**
	Sig. (2-tailed)	.000	.417	.003	.802	.024	.001
	N	89	89	89	89	89	89
X35	Pearson Correlation	.542**	-.115	.177	.059	.192	.287**
	Sig. (2-tailed)	.000	.283	.098	.585	.072	.006
	N	89	89	89	89	89	89

Correlations

		X17	X35
FF1	Pearson Correlation	.573**	.542**
	Sig. (2-tailed)	.000	.000
	N	89	89
X3	Pearson Correlation	-.087	-.115
	Sig. (2-tailed)	.417	.283
	N	89	89
X9	Pearson Correlation	.312**	.177
	Sig. (2-tailed)	.003	.098
	N	89	89
X45	Pearson Correlation	-.027	.059
	Sig. (2-tailed)	.802	.585
	N	89	89
X66	Pearson Correlation	.239*	.192
	Sig. (2-tailed)	.024	.072
	N	89	89
X67	Pearson Correlation	.354**	.287**
	Sig. (2-tailed)	.001	.006
	N	89	89
X25	Pearson Correlation	1.000	.175
	Sig. (2-tailed)	.	.101
	N	89	89
X58	Pearson Correlation	.175	1.000
	Sig. (2-tailed)	.101	.
	N	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		FF2	X6	X7	X34	X16
FF2	Pearson Correlation	1.000	.553**	.667**	.661**	.668**
	Sig. (2-tailed)	.	.000	.000	.000	.000
	N	89	89	89	89	89
X6	Pearson Correlation	.553**	1.000	.250*	.237*	.231*
	Sig. (2-tailed)	.000	.	.018	.025	.029
	N	89	89	89	89	89
X7	Pearson Correlation	.667**	.250*	1.000	.406**	.347**
	Sig. (2-tailed)	.000	.018	.	.000	.001
	N	89	89	89	89	89
X34	Pearson Correlation	.661**	.237*	.406**	1.000	.285**
	Sig. (2-tailed)	.000	.025	.000	.	.007
	N	89	89	89	89	89
X16	Pearson Correlation	.668**	.231*	.347**	.285**	1.000
	Sig. (2-tailed)	.000	.029	.001	.007	.
	N	89	89	89	89	89
X19	Pearson Correlation	.707**	.311**	.356**	.305**	.401**
	Sig. (2-tailed)	.000	.003	.001	.004	.000
	N	89	89	89	89	89
X32	Pearson Correlation	.636**	.145	.233*	.298**	.344**
	Sig. (2-tailed)	.000	.174	.028	.005	.001
	N	89	89	89	89	89

Correlations

		X19	X32
FF2	Pearson Correlation	.707**	.636**
	Sig. (2-tailed)	.000	.000
	N	89	89
X11	Pearson Correlation	.311**	.145
	Sig. (2-tailed)	.003	.174
	N	89	89
X12	Pearson Correlation	.356**	.233*
	Sig. (2-tailed)	.001	.028
	N	89	89
X13	Pearson Correlation	.305**	.298**
	Sig. (2-tailed)	.004	.005
	N	89	89
X24	Pearson Correlation	.401**	.344**
	Sig. (2-tailed)	.000	.001
	N	89	89
X28	Pearson Correlation	1.000	.434**
	Sig. (2-tailed)	.	.000
	N	89	89
X49	Pearson Correlation	.434**	1.000
	Sig. (2-tailed)	.000	.
	N	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		FF3	X11	X17	X23	X32	X19
FF3	Pearson Correlation	1.000	.607**	.664**	.685**	.727**	.628**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000
	N	89	89	89	89	89	89
X11	Pearson Correlation	.607**	1.000	.195	.345**	.233*	.135
	Sig. (2-tailed)	.000	.	.067	.001	.028	.207
	N	89	89	89	89	89	89
X17	Pearson Correlation	.664**	.195	1.000	.342**	.410**	.273**
	Sig. (2-tailed)	.000	.067	.	.001	.000	.010
	N	89	89	89	89	89	89
X23	Pearson Correlation	.685**	.345**	.342**	1.000	.316**	.309**
	Sig. (2-tailed)	.000	.001	.001	.	.003	.003
	N	89	89	89	89	89	89
X32	Pearson Correlation	.727**	.233*	.410**	.316**	1.000	.434**
	Sig. (2-tailed)	.000	.028	.000	.003	.	.000
	N	89	89	89	89	89	89
X19	Pearson Correlation	.628**	.135	.273**	.309**	.434**	1.000
	Sig. (2-tailed)	.000	.207	.010	.003	.000	.
	N	89	89	89	89	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		FF4	X10	X21	X35
FF4	Pearson Correlation	1.000	.756**	.696**	.700**
	Sig. (2-tailed)	.	.000	.000	.000
	N	89	89	89	89
X17	Pearson Correlation	.756**	1.000	.279**	.362**
	Sig. (2-tailed)	.000	.	.008	.000
	N	89	89	89	89
X31	Pearson Correlation	.696**	.279**	1.000	.176
	Sig. (2-tailed)	.000	.008	.	.099
	N	89	89	89	89
X58	Pearson Correlation	.700**	.362**	.176	1.000
	Sig. (2-tailed)	.000	.000	.099	.
	N	89	89	89	89

**. Correlation is significant at the 0.01 level (2-tailed).