

ROLE OF PLAYFULNESS IN CREATIVITY AMONG UNIVERSITY STUDENTS



By
MARYAM BATOOL

Dr. Muhammad Ajmal
NATIONAL INSTITUTE OF PSYCHOLOGY
Center of Excellence
Quaid –i-Azam University, Islamabad

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Dr. Muhammad Ajmal
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Approved by



Supervisor



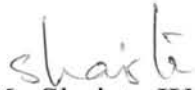
Director, NIP



External examiner

CERTIFICATE

Certified that M.Sc Research Report titled “**Role of *Playfulness in Creativity among University Students***” prepared by **Miss Maryam Batool** has been approved for submission to Quaid-i-Azam University, Islamabad.


(Ms. Shaista Waqar)
Supervisor

**Dedicated to
My Beloved Parents**

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May Allah bless you all.

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ABSTRACT

The present study aimed to investigate the role of playfulness in creativity among university students. A comparative analysis between the high and low playfulness score regarding creativity score was carried out. Similarly, gender differences in playfulness and creativity were studied. In addition to this, students of social and natural sciences were also compared for playfulness and creativity. Two scales were used for present research. First, playfulness scale for adult and second, Test of creativity. The present research investigated the role of playfulness on creativity among university students. The study was conducted on the total sample of 60, which included 15 boys and 15 girls from social sciences and 15 boys and 15 girls from natural sciences. Convenience sampling techniques were used for present research. Results showed significance differences between high and low playful students regarding creativity. Result indicated that high playful students scored high on creativity. Results showed non significance differences between social and natural sciences on playfulness and creativity score. Results showed non significance gender differences on creativity test. Female score high on creativity as compared to men and non significance gender differences on playfulness score. After all, we can say that students will score high on playfulness will also score high on creativity.

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**ROLE OF PLAYFULNESS IN CREATIVITY
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INTRODUCTION

INTRODUCTION

Play is an activity that is joyful, free of anxiety, which has no clear-cut goal and is done for its own sake. It is a natural way of finding out that we are and what we can be. Play helps us to create new responses to our life challenges and helps us experience our life as more an exciting adventure. Playfulness allows us to try on different Characters, attitudes and personalities. This helps us to explore and expand our possibilities in life. Wimmer (2002) proposed that play, joy, and spontaneity are rooted in all of our hearts. Infants, driven by curiosity in their quest for survival, playfully 'explore with their entire bodies the universe around them that is then translated into an inner world. Manipulation of the relationship between this inner self and the external world is a primary tool for growth. For adults, play continues as an important vehicle because it fosters numerous adaptive behaviors including creativity, role rehearsal, and mind/body integration.

Play is to the child, work, thought, art and relaxation and cannot be pressed into any single formula. It expresses a child's relation to himself and to his environment and without adequate opportunity for play, normal and satisfactory emotional development is not possible (Lowensfield, 1935).

The right to play is the child's first claim on the community. Play is nature's training for life. No community can infringe that right without doing deep and enduring harm to the bodies and minds of its citizens (Lloyd George, 1926).

Play can be fun or serious. Through play children explore social, material and imaginary worlds and their relationship with them, elaborating all the while a flexible range of responses to the challenges they encounter. By playing, children learn and develop as individuals, and as members of the community (Children's Play Council, 1998).

Play is a very emotive word which means different things to different people, and has been defined in many ways. Play is a kind of dramatic composition, dramatic work, show, motivation, and act.

Play-is-a dynamic, active, and constructive behavior--is an essential and integral part of all children's healthy growth, development, and learning across all ages, domains.

Play is a dynamic process that develops and changes as it becomes increasingly more varied and complex. Play is a key facilitator for learning and development across domains, and reflects the social and cultural contexts in which children live (Christie, 2001).

Play is the work of childhood. It's the laboratory in which children figure out how the world works, who they are, who they might be, and what they can and cannot do.

Play

Theorists have struggled unsuccessfully for years to reach consensus on a definition of play (e.g., Sutton-Smith, 1997). However, a comprehensive work on play by Rubin, Fein, and Vandenburg (1983) to define play by three dimensions, i.e.

- behavior,
- context,
- Disposition.

Studies on the behavioral dimension typically focus on cognitive or social level (e.g., Piaget, 1950/1962).

Research on the contextual dimension of play focuses on such variables as space, time, social constraints, or body states.

The third dimension, dispositional tendencies, includes tendencies to act in certain ways even under varying conditions. Rubin et al., (1983) found in the literature, six aspects of play dispositions. These include play as (a) an intrinsically motivated behavior, (b) a focus on the process over the product, (c) play rather than exploratory behaviors, (d) non-literality, (e) freedom from external rules, and (f) active engagement.

Types of Play

There are many types of play. Some are describe below.

Active Play. Play involves movement and physical activity. Active play is the perfect type of play. Whether running around in the yard, or building sand castles at a local playground, active play is an essential part of a child's development. Some examples of active play are:

- Riding Bikes
- Swinging at the playground
- Kickball

Cooperative Play.

Cooperative Play is a play for child and a group of friends. Cooperative play can take place almost anywhere — outside on the playground or downstairs in the basement. In any environment, children learn from watching other children play and interacting with them socially. Some fun cooperative play activities are:

- Interactive pretend play
- Basketball
- Board games

Creative Play. Play that explores child's imagination and makes something out of nothing. When a child become more creative some unique and different thing will happen.

Creative play includes such things as:

- Painting
- Sculpting play dough
- Building or creating crafts

Creative play will encourage fine motor/manipulative skills, intellectual development through planning and naming her pictures and creations, language development through describing her projects, and social development when playing with friends. It includes things like drawing, painting, modeling, cutting and sticking and the like

Dramatic Play.

Play that involves pretend and make believe, or whatever the imagination dreams seems common place to you opens a whole new world of possibilities to a child. Dramatic play can include:

- Simple role playing
- Using props to create a "new" environment
- Creating scenes or situations with dolls and puppets
- Organizing a drama at stage from children.

Children love role-playing and exploring worlds outside of their everyday, creating new and fun situations with every costume and prop.

Manipulative Play.

Play that involves hand-eye coordination and motor skills. Children need the opportunity to work on finer skills that involve a little more control and direction. Manipulative play develops the sense of coordination, challenging their

little fingers to follow the lines or use their tools properly. Some examples of manipulative play are:

- Coloring, especially in a defined area
- Paper crafts and art involving moving parts that need to be "put together"
- Using a safe and simple tool kit to help with tasks around the house

Quiet Play:

Play that keeps children's mouths shut but their minds open. Children need quiet time to their learning environment, like books and puzzles. Quiet play provides children an opportunity to think and reason and can include such activities as:

- Beading a necklace
- Working on puzzles
- Reading or looking at pictures

By providing a silent environment, children can focus on their toys and playthings and really get down to the work of being a child. After all, play is the work of children!

The freedom to play and learn is the right of every child, whatever their background, religion or family structure. Through play, a child learns about himself and others around him, which in turn improves their understanding and response to things in their wider world.

People can struggle to know children's capabilities at a given age or understand how different forms of play encourage different learning outcomes. As a child develops the ability to "actively think" they are able to take on a greater amount of knowledge as they quicken their process and grasp of concepts and ideas. They begin to form patterns and develop consequence emotion from which the "personality" develops at a deeper level. Learning styles impacts on our

character and when considering how to develop our children it is useful to understand your child's learning style. The two learning styles are:-

Impulsive - acting before thinking, driven by impulse and instinct and not waiting or wanting to evaluate

Reflective – thinking before action, gathering information first and applying thought in a problem-solving manner acting in a timely manner

How children put their learning style into practice can be defined as either free play or structured play:-

Free Play - where a child sets out their own rules. This play form often engages the child for longer periods of time where they can become fully engrossed in the activity they have created

Structured Play – usually adult led or structured with play being more limited with less opportunities to be inventive

Both forms of play are valuable and can be further categorized into four different types of play, which everyone will instantly recognize but may not attach any particular learning outcome to:-

Functional Play an early form of play where a child learns through touch, taste, use and noise.

Constructive Play play with materials, learning the physical properties of an item before going on to construct things

Pretend play emerging as imitation initially the child goes on to reenact experiences and then by using pictures in their mind the child visualizes how events are related

Games with Rules – aiding concentration and setting limits in order help social behavior (Bjorklund, 1977).

Theories of play

Psychologists, anthropologists, philosophers and other intellectuals have long been trying to investigate the phenomena of play, as why children play what are the motives behind such behavior. This investigation led to wide range of theories, which throws light on different perspectives of play behavior. Bjorklund (1978) has categorized all these into two broad classes i.e., classical and contemporary theories of play.

Classical Theories:

Classical theories deal with explaining the motives and purposes of play toward the goal of understanding why humans play. These include surplus energy, relaxation, pre-exercise and recapitulation theories.

Surplus Energy Theory: Surplus Energy theory was put forth by Herbert Spencer who explained play is the result of surplus energy that exists because the young are freed from the business of self-preservation through the activities of their parents. Energy finds its release in the aimless exuberant activities of play. (as cited in Bjorklund, 1978). (Based upon postulates: a quantity of energy is available to the child; there is a tendency to expend energy thought is not necessary for maintenance of life balance.)

Patrick (1916) proposed a relaxation theory of play. He explained that (Recreation) play is seen as a mode of dissipating the inhibitions built up from-fatigue due to tasks that are relatively new to the organism. Thus, play is found more often in childhood. Play replenishes energy for as yet unfamiliar cognitive activities of the child and reflects deep-rooted race habits phylogenetically acquired behaviors that are not therefore new to the organism (as cited in Bjorklund, 1978).

(Phylogenetic - functions common to the race Ontogenetic - functions specific to the individual requiring training) (as cited in Bjorklund, 1978).

Pre-Exercise Theory of Karl Groos (as cited in Bjorklund, 1978) suggested that Play is the necessary practice for behaviors that are essential to later survival. The playful fighting of animals or the rough and tumble play of children are essentially the practice of skills that will later aid their survival.

Recapitulation Theory was proposed by (G ' Stanley Hall - 1906) .Play is seen not as an activity that develops future instinctual skills, but rather, that it serves to rid the organism of primitive and unnecessary instinctual skills carried over by hereditary. Each child passes through a series of play stages corresponding to and recapitulating the cultural stages in the development of the race. (Plays roots are in the ritual of the savage and his need for magic) (as cited in Bjorklund, 1978).

Contemporary Theories

Contemporary theories on the other hand reflect a more encompassing and dynamic approach to explaining human behavior. Within these contemporary theories, play is treated as one aspect of behavior within a more wide-range focus of explaining developmental trends in behavior and causal relationships between behavior and environment. These include the views of Freud, Erickson, Piaget and Rubin, Fein, & Vandenberg's and perspective on play.

Psychoanalytic Theory

Freud (1959) presents an extensive system to explain children's play. He regards play as a means to express emotions and to master difficult or conflicting events. Using fantasy in play allowed children to reenact pleasant memories, to initiate adult roles in an attempt to gain a sense of mastery and self-esteem or to play put personal troubles, fears and emotions in a secure atmosphere. In this way

children would gain a better understanding of themselves and their world as well as an ability to cope with the realities of living. For example when children start nursery school, the fears "of leaving home may prompt a child to bring a favorite toy to school or to comfort a doll in the housekeeping corner by telling it how much fun school really is.

Freud examined the fantasy of adults and concluded that fantasy helps the person to hallucinate about the object of gratification in the situation of serves deprivation. This hallucination serves as a foundation of ego development. The child learns to tolerate the delayed gratification of his needs and to get gratification in the absence of gratifying object. This learning is the basis of play in which the child tries to fulfill his unsatisfied wishes and to overcome the anxiety provoking situations. The opportunity of catharsis during play helps the child to resolve conflicts in the absence of a realistic situation. Buhler, Anna Freud, Peler, and Erickson further elaborated Freud's explanations (as cited in Schaefer, 1979). They highlighted the role of conflict and deprivation in the development of play and also about play's adaptive role in the mastery of anxiety.

Erickson (1963) stressed the open nature of spontaneous play, which enabled the child to adjust play to personal identity needs. During the early years, the development needs for independence and initiative would strongly influence the type of play seen among children. Toddlers would tend to use play to practice newly acquired skills, such, as walking or talking, in a variety of situations to gain the self-assurance necessary for a sense of independence. Preschool age children equipped with a basic sense of autonomy.

Would be inclined to direct play toward initiating creative endeavors. In this way, children would gain a great deal of pleasure and self-worth from imaginative play, which allowed them to face reality on their own terms (as cited in anwar,2004).

(Piaget - 1962) examine play from the perspective of its contribution to intellectual development. Play is derived from the child's working out of two

fundamental characteristics of his mode of experience and development. These are accommodation and assimilation -- the attempts to integrate new experiences into the relatively limited number of motor and cognitive skills available at each age.

- Accommodation the attempt to imitate and interact physically with the environment.
- Assimilation the attempt to integrate externally derived precepts or motor actions in a limited amount of schemata.

Rubin, Fein, and Vandenberg's Perspective on Play.

It is essential to elucidate the definition of the construct of playfulness. While scholars have debated the definition of play for decades without arriving at a consensus, a comprehensive work on play, published as part of the third volume of the *Handbook of Childhood Psychology* in 1983, (Rubin et al., 1983) provided a comprehensive three-dimensional definition of play. Rubin and his coauthors stated:

Play is a behavioral disposition that occurs in describable and reproduceable contexts and is manifest in a variety of observable behaviors (Rubin et al., 1983). The context for play consists of five criteria including familiar objects or toys, an agreement between the children and the adults that the children have a choice in their play, minimally intrusive adults, friendly atmosphere, and practical schedule which suits the children's needs (Rubin et al., 1983).

The behavioral dimension of play includes observable cognitive (e.g., Piaget's levels of cognitive play) or social behaviors. Advancing the 1983 description of play behaviors, Rubin (1989) combined cognitive and social behaviors as well as non-play behaviors to create the Play Observation Scale. Social play consists of solitary play, parallel play, and group play. Cognitive play

consists of functional play, constructive play, dramatic play, and games with rules. Non-play behaviors include exploratory behaviors, reading, unoccupied behaviors, onlooker behaviors, transitions, active conversations, aggression, and rough and tumble play (Rubin, 1989). According to Rubin, Fein, and Vandenberg a third dimension of play is the disposition with which it is carried out. The disposition of play includes six criteria: (a) intrinsically motivated behavior, (b) a focus on the process rather than the product, (c) different than exploratory behaviors, (d) nonliteral, (e) free from external rules, and (f) active engagement (Rubin et al., 1983, pp. 698-700). The dispositional dimension of play was based on the supposition that “which” behaviors one exhibits is less important than “how” the behaviors are carried out. Although Rubin et al.,(1983) used Piaget’s classification of three types of play (practice, symbolic, games-with-rules) as an example of play behaviors, close examination of Piaget’s criteria for play, indicate that he might have been more concerned with the disposition or “how” of playfulness than is generally thought.

Piagetian perspective on Play.

Piaget (1950/1962) identified six criteria that are typically used to describe play: (a) lacking precision, (b) spontaneous, (c) pleasurable, (d) lacking organization, (e) free from conflicts, and (f) consisting of additional incentives. However, he presented logical arguments to refute each criterion and concluded that the only acceptable definition of play was that play occurs when assimilation predominates over accommodation. Piaget wrote, “Play is primarily mere functional or reproductive assimilation” (Piaget, 1950/1962, p. 87). He also stated, “Play begins, then, with the first dissociation between assimilation and accommodation” (Piaget, 1950/1962, p. 162). This dissociation occurs in disequilibrium and is an extreme case of assimilation. Although Rubin et al. did not cite Piaget among researchers who focused on the disposition of play, Piaget (1950/1962) wrote that play is not a behavior but rather an orientation of the behavior: An examination of the main criteria usually adopted to distinguish play from non-lucid activities shows clearly that play is not a behaviour *per se*, or one particular type of activity among others. It is determined by a certain orientation of the behavior, or by a general ‘pole’ of the activity, each particular action being

characterized by its greater or less proximity to the pole and by the kind of equilibrium between the polarized tendencies (as cited in cases,2005).

Vygotskian Perspective on Play.

Vygotsky (1933) defined play differently from Piaget. He stated that play should not be judged on whether or not the act is enjoyable. He suggested that play begins at the minimum age of three with the emergence of symbolic play. Vygotsky named two criteria of play: (a) an imaginary situation, and (b) rules correlating with the imaginary situation (Nicolopoulou, 1993). An imaginary situation exists when children play in order to fulfill their wishes such as a child who played cabs because he had wished to ride in a cab (Vygotsky, 1933, p. 539). Having rules created by the children as a part of their imaginative play was Vygotsky's second criteria of play. Vygotsky described all imaginary situations as having rules. He also described how throughout play, young children use objects to represent items. Vygotsky used the example of a child participating in symbolic play using a stick as a mental representation for a horse (Vygotsky, 1933). When discussing play for older children Vygotsky stated: At school age play does not die away but permeates the attitude to reality. It has its own inner continuation in school instruction and work (compulsory activity based on rules). All examinations of the essence of play have shown that in play a new relationship is created between the semantic and visible fields – that is, between situations in thought and real situations(as cited in cases,2005).

Lieberman's Perspective on Play.

Nina Lieberman (1977), a pioneer of research on playfulness offered a formal definition of the construct and attempted to operationalize it. She concluded that playfulness is a unitary trait characterized by the five components that comprised her definition, i.e., physical spontaneity, manifest joy, sense of humor, social spontaneity, and cognitive spontaneity. She noted that playfulness was a disposition and described it as follows: This mean the lightheartedness that we find as a quality of play in the young child's activities and, later on, as the combinatorial play essential to imagination and creativity. Therefore, playfulness as a behavior that goes beyond the childhood years; and, through its component

parts of sense of humor, manifest joy, and spontaneity, it has major implications for childrearing practices, educational planning, career choices, and leisure pursuits(as cited in cases,2005).

Playfulness

Child development researchers have provided evidence to demonstrate that playfulness is a measurable construct (Rogers's et al., 1998) that shows wide individual differences. Moreover, playfulness is known to be associated with several variables including the following: (a) creativity (e. g. Lieberman 1965, 1977; Taylor, 1992; Taylor & Rogers, 2001), (b) gender (Barnett, 1991), (c) intelligence (Armstrong, 1998; Barnett & Fiscella, 1985, Harris, 1989), (d) culture (Li, Bundy, & Beer, 1995; Porter & Bundy, 2001; Taylor, 1992, Taylor & Rogers, 2001), (e) workplace attitudes (Glynn & Webster,1992 1993), (f) personality (Meehl, et al., 1971), (g) temperament (Rogers et al., 2000), and (h) teacher characteristics (Graham, 1987).

Playfulness and Creativity

Lieberman (1965, 1977) was the pioneer who first proposed a relationship between playfulness and creativity, and several researchers provided additional data that pointed to a concurrent relationship between play and creativity. In fact, in 1983 Nathan Kogan, in a comprehensive review of research on creativity, made this comment: If there is any sort of new look to recent process-oriented research on children's creativity, it is the repeated demonstrations of linkages between play behaviors and dispositions on the one hand and divergent thinking performance on the other hand.(Kogan, 1983, p. 639).

Play and creativity have been linked in numerous ways. Theoretically, pretend play fosters the development of cognitive and affective processes that are important in the creative act. Russ's (1993) model of affect and creativity

identified the major cognitive and affective processes involved in creativity and the relations among them, based on the research literature. Central to both play and creativity is divergent thinking. Both cognitive and affective processes in play have been related to divergent thinking in children. In a longitudinal study, quality of fantasy and imagination in play predicted divergent thinking over time. Divergent thinking itself was relatively stable over time. An important question is whether play can facilitate creativity. Play has been found to facilitate insight ability and divergent thinking. Studies have also shown that children can be taught to improve their play skills. Future research studies should: (i) investigate specific mechanisms that account for the relationship between play and creativity; (ii) develop play intervention techniques that improve play skills; and (iii) carry out longitudinal studies with large enough samples to enable the application of statistical procedures such as path analysis.

Divergent Thinking and Creativity. Nina Lieberman (1965, 1977) was one of the first researchers to study playfulness with regard to divergent thinking. She hypothesized that kindergarteners who received higher rates on playfulness would also receive higher scores on divergent thinking. Lieberman studied 93 children who were enrolled in kindergarten classrooms in New York City. She asked teachers to rate the children for playfulness using The Playfulness Scale, interviewed the children in order to obtain scores on divergent thinking tasks, and tested intelligence through the use of The Peabody Picture Vocabulary Test. She concluded that playfulness and divergent thinking were significantly and positively related.

Barnett and Kleiber (1982) examined the relationship between playfulness and divergent thinking task scores in young children while taking into account both intelligence and gender differences. They assessed 106 children in both day care and kindergarten classrooms using Lieberman's (1977) Playfulness Scale, the Peabody Picture Vocabulary Test, and the Novel Uses Test created by Torrance. Correlations between playfulness and divergent thinking, were significant, a finding that was similar to Lieberman's original findings. However, when taking into account the intelligence factor, Barnett and Kleiber found little or no

relationship between playfulness and divergent thinking. They then expanded on these findings and took gender differences into account with playfulness, divergent thinking, and intelligence and concluded that gender differences make an impact on the results. Playfulness and divergent thinking were related among females but not among males. This study showed a need for more research on the relationship between playfulness, gender, and divergent thinking (Barnett & Kleiber, 1982).

The relationship between playfulness and creativity has also been studied in the Japanese culture by Taylor and Rogers (Taylor, 1992; Taylor & Rogers, 2001) who observed 164 young children. Teachers at the Kawasaki Kindergarten in Kawasaki City, Japan rated all the children using the Child Behaviors Inventory (Rogers et al., 1998), the Test for Creativity Thinking-Drawing Production (TCT-DP) and the children's drawings. Twelve children were then chosen to be studied using qualitative measures. Taylor measured the children's drawings for their artistic creativity. Children were asked to draw anything they wished during an art activity and results were calculated based on Torrance's scale for scoring. Drawings were judged for fluency, flexibility, originality, and elaboration.

Results from the quantitative data showed no significant relationship between the two factors, playfulness and creativity. However, the qualitative data suggested that playfulness and creativity may co-occur (Taylor, 1992; Taylor & Rogers, 2001).

Playfulness and Adults

We have long celebrated playfulness in children and animals; less attention has been paid to adults' playfulness, in spite of the recognition of its existence. Adults have been known to evidence playful behaviors even when they are engaged in practical or serious activities and in the workplace, indicating perhaps that work activities might be accomplished quite playfully at times. Playfulness is examined at the individual level of analysis for two reasons (Abrams; Balogh; Bowman; Csikszentmihalyi; Csikszentmihalyi; & LeFever; Pilchard; Roy, as cited in Glynn & Webster, 1992). First, conceptualizing playfulness as an individual predisposition parallel trend in the educational and anthropological literatures in

which it is argued, "... the definition of play should properly lie within the individual" (Barnett, 1991a). Second, in the organizational literature, there is a recognized need to develop measure of individual differences with which to examine main and interaction effects in studies of work design because personality has been shown to affect work attitudes and performance (Staw, Bell, & Clausen; Weiss & Adler; Reilly, as cited in Glynn & Webster, 1992).

Recently, there has been growing interest in understanding and measuring the personality construct of playfulness, i.e., the predisposition to engage in play behaviors. Lieberman (1977) attempted to extend her earlier work to adolescents and found that the relatively small number of interrelated attributes that characterized preschoolers' play needed to be expanded. She reported that many additional forms of playfulness both positive and negative, were characteristic of adolescents, including horseplay, enthusiastic participation in a wide range of social activities, hostile wit, and taunting pranks of others. Investigation of playfulness among adults has received recently attention. (Glynn & Webster, 1992). They formulated the concept of playfulness as a personality construct for adults. Glynn and Webster defined adult playfulness in the following way: it is an individual trait, a propensity to define (or redefine) an activity in an imaginative, nonserious or metaphoric manner so as to enhance intrinsic enjoyment, involvement, and satisfaction. Playfulness is a multidimensional construct encompassing cognitive, affective, and behavioral components, which together constitute a continuum along which individuals range from low to high.

Glynn and Webster (1992) constructed a theory-based measure of this trait in adults. The playful person, then tends to approach daily activities (work, relationships, recreation) with a predisposition to have fun and thus to enjoy himself or herself. Glynn and Webster (1992) found that adults who were more playful perceived work actions as being more enjoyable and kept more of a playful attitude in the workplace.

Adult Playfulness

Playfulness has been studied primarily with children, but literature on adult playfulness is less plentiful. Nevertheless, in the few studies that are available, adult playfulness has typically been characterized by researchers as an enjoyable activity that keeps adults actively involved and intrinsically motivated (Glynn and Webster, 1992). Glynn and Webster (1992) defined adult playfulness in the following way:

An individual trait, a propensity to define (or redefine) an activity in an imaginative, nonserious or metaphoric manner so as to enhance intrinsic enjoyment, involvement, and satisfaction. Playfulness is a multidimensional construct encompassing cognitive, affective, and behavioral components, which together constitute a continuum along which individuals range from low to high.)Graham (1987) adopted the Rogers et al. (1998) definition of playfulness which was based on the dispositional criteria of play reviewed by Rubin and colleagues (1983). She adapted the Child Behaviors Inventory of playfulness in children to create an adult version called the Adult Behaviors Inventory. Young adult subjects in the present study responded to the ABI.

Correlates of adult playfulness

Personality

When studying adult personalities, Meehl, et al., 1971, found that "...item content and descriptions such as, Cheerful, Enthusiastic, Stimulating, and "Colorful" Personality, Smiles Often, Meets People Easily, all load together quite highly on a factor that Cattell has viewed as one of the best established assessments of adult personality" (Singer & Singer, 1980, p.153).

Workplace

Glynn and Webster (1992) created The Adult Playfulness Scale (APS) specifically for use in studies being conducted in the workplace. The APS taps five characteristics including, spontaneity, expressiveness, fun, creativity, and silliness.

The Adult Playfulness Scale (APS) consists of 32 adjective pairs on which adults rate themselves on using a scale from 1-7. Glynn and Webster (1992) studied over 300 subjects representing various professions including young adults in their undergraduate career, graduate students, and employees in a workplace. Five studies included techniques such as asking participants to explore a new spreadsheet program (two of these were completed), completing questionnaires in order to assess individual traits, completing a questionnaire while studying how to make decisions, and solving word puzzles. Other assessments were also given to the participants throughout the studies, some of which included The Cognitive Spontaneity Scale, Creative Personality Scale, and an adaptation of the Job Descriptive Survey. The APS was tested for internal consistency, reliability, test-retest reliability, and both concurrent and convergent reliability. A significant relationship to playfulness occurred with task evaluations, perception, involvement, and performance. The study showed no significant relationship between gender and playfulness (Glynn & Webster, 1992, 1993). Glynn and Webster (1992) found that adults who were more playful perceived work actions as being more enjoyable and kept more of a playful attitude in the workplace. In addition, the data showed a significant relationship between self-reported playfulness and cognitive spontaneity, while also showing a relationship between playfulness and creativity as measured by the Adult Playfulness Scale and the Creative Personality Scale. This study showed no evidence for a relationship between self-reported adult playfulness and either gender or age.

Nina Lieberman (1977) began to study playfulness in adults. From her work on child playfulness, i.e., she created a self-administered playfulness scale for adults using the five characteristics of physical spontaneity, cognitive spontaneity, social spontaneity, manifest joy, and sense of humor. In a pilot study with undergraduate students she participated as the instructor while the students enrolled in her college class rated themselves for playfulness. She also had the students make their own comments on playfulness and their scores. Comments from the students showed that the students believed that both the “subject matter and the personality of the teacher influenced their manifestation of playfulness.” (Lieberman, 1977, p. 51) Lieberman asked sixteen teachers, consisting of both

elementary school and middle school teachers, to list characteristics of playfulness. The most common characteristics that teachers identified were: (a) Sense of humor; (b) Kindness, sensitivity; (c) Cheerfulness, laughter; (d) Enthusiasm, active participation; (e) Flexibility; (f) Imagination; (g) At ease, relaxation; and (h) Entertainment (Lieberman, 1977, p. 52). The teachers stated that when they showed these characteristics in the classroom environment, the students responded more positively to the learning environment and used more divergent thinking in the process (Lieberman, 1977).

Creativity

According to Tegano, Moran, and Sawyers (1991), creativity may be defined as “the interpersonal process by means of which original, high quality and genuinely significant products are developed”. These authors stated that originality, high quality of responses, and significance to the culture are vital to assessing the degree of creativity. According to this, they found that children who engage in dramatic play, use divergent thinking skills, use metaphoric thinking, have curiosity, reflect on decisions, don't always conform, are willing to take risks, are intrinsically motivated are some examples of possible characteristics in creative children (Tegano, Moran, & Sawyers, 1991).

When defining creativity, Runco stated “This definition is predicated on the idea that creativity requires a special combination of skills; some of these reflect maturity and experience and some reflect behaviors that are found in early childhood. The combination of maturity and immaturity-and continuity and discontinuity-is possible because creativity is multifaceted; it is a complex syndrome and relies on a variety on traits, skills and capacities” .Runco (1996) also stated that there are three characteristics of creativity, namely, transformation and interpretation, discretion, and intentions. People who are considered to be creative are typically able to take knowledge and transform it into something new. Discretion is also essential to creative persons because, in order to be creative, a person must have the ability to think in both a convergent and a divergent manner.

The reasoning for this is because a person needs a foundation of core knowledge on which to stand in order to make a change.

The Stages of the Creative Process:

1. Finding or formulating a problem. George Keller (American psychologist) called this stage "first insight."
2. Researching and drawing from life experiences (memory), networking, etc. This stage is variously called "discovery" and "saturation."
3. Mulling over the problem in a sort of chaos of ideas and knowledge, letting go of certainties (forgetting). Jacob Getzel (American psychologist) called this stage "incubation" -- engaging the intuitive, non-sequential, or global thinking at the core of creativity.
4. One or more ideas surface. This is also called "immersion" and "illumination."
5. The idea is tested as a potential solution to the problem. Getzel called this "verification." This final stage often involves revision — conscious structuring and editing of created material (Delahunt, 1996).

Graham Wallas (1926) presented one of the first models of the creative process. In the Wallas stage model, creative insights and illuminations may be explained by a process consisting of 5 stages:

- (i) *Preparation* (preparatory work on a problem that focuses the individual's mind on the problem and explores the problem's dimensions),

- (ii) *Incubation* (where the problem is internalized into the subconscious mind and nothing appears externally to be happening),
- (iii) *Intimation* (the creative person gets a 'feeling' that a solution is on its way),
- (iv) *Illumination* or insight (where the creative idea bursts forth from its subconscious processing into conscious awareness); and
- (v) *Verification* (where the idea is consciously verified, elaborated, and then applied).

Creativity is the ability to think up and design new inventions, produce works of art, solve problems in new ways, or develop an idea based on an original, novel, or unconventional approach.

Creativity is the ability to see something in a new way, to see and solve problems no one else may know exists, and to engage in mental and physical experiences that are new, unique, or different. Creativity is a critical aspect of a person's life, starting from inside the womb onward through adulthood.

Creativity remains a poorly defined construct within the sciences that study it. Creativity is not easily distinguished from intelligence, wisdom, ingenuity, insight, or intuition, all terms used to describe creative behaviors. Guilford's (1966) distinction between convergent and divergent thinking has perhaps had the most influential effect on how our understanding of creativity has developed. Convergent thinking leads one to arrive at a correct, conventional answer whereas divergent thinking involves generating many novel answers and solutions. Since Guilford, many other components have been included in our understanding of creativity. Here are some creative thinking abilities assembled by Bowd, McDougall, and Yewchuk (1994, pp 150-151):

- *Fluency*: The ability to produce many responses to an open-ended question or problem, such as "how many uses can you think of for a paper clip?"
- *Flexibility*: The ability to generate ideas that are unconventional, or to view a situation from different perspectives.
- *Originality*: The ability to produce unique, unusual, or novel responses, relative to one's reference group.
- *Elaboration*: The ability to add rich and elaborate detail to an idea, and to develop and implement it.
- *Visualization*: The ability to imagine and mentally manipulate images and ideas, so as to see them from different internal and external perspectives.
- *Transformation*: The ability to change one thing or idea into another, to see new meanings, applications, and implications of something already in place.
- *Intuition*: The ability to see relationships or make connections based on partial information.
- *Synthesis*: The ability to combine parts into a coherent whole.

Tegano, Moran, and Sawyers (1991) characterized child creativity as including fantasy, divergent thinking, metamorphic thinking, conceptual tempo, curiosity, personality, temperament, nonconformity, risk taking, and motivation. They found that teachers who provided materials and facilitated play activities helped to encourage creativity in young children. Moreover, they asserted that child creativity could be fostered by more playful teachers.

Stability of Creativity from Childhood to Adulthood.

Albert (1996) found that the level of creativity was typically not maintained from childhood to adulthood. He observed that (a) creativity in childhood is different from creativity in adulthood, (b) education plays a very minute role in children's creativity, (c) adult creativity is impacted by the person's environment and experiences in life, (d) there is a difference in families who are creative within the workplace positions and social positions they acquire, (e)

creativity can be detected at a very early age, (f) and adult creativity is impacted by the changes during and after adolescence. When studying adult creativity, Keegan's (1996) findings did not support Albert's (1996) observations. He stated that children's creativity can be a predictor of adult creativity. Keegan (1996) found that creative adults tend to be able to gain knowledge, organize knowledge, have motivation to work hard, and love the work in which they participate. He summed these characteristics up by saying that creative adults have the ability to acquire expert knowledge in their field of study.

He made a point that children are capable of being creative following these criteria, but they do so to a different degree because acquiring expert knowledge is a process requiring many years (Keegan, 1996). "Great as it may seem, and great as it may be, the difference between the processes of thought, motivations, and emotions of a Darwin or Newton is, nevertheless, 'certainly one of degree and not of kind'" (Keegan, 1996,). Tegano et al., (1991) characterized children's creative potential separately from adult creativity.

They characterized children's creative potential in terms of originality and process rather than product. Adult creativity, however, was defined as including originality, product, and significance. Creativity in the young child then can lead to adult creativity. They stated, "The emphasis on multiple ideas or solutions, generated in a non-evaluative atmosphere that produces originality-this is the starting point for adult creativity" (Tegano et al., 1991,).

Fostering Creative Development.

Encouraging children to make their own choices is important. Children should be permitted frequent opportunities - and lots of time - to experience and explore expressive materials. Put your emphasis on the process of creativity and not on the finished product. What children learn and discover about themselves is vital to their development. Show your support for the creative process by appreciating and offering support for children's efforts. Independence and control are important components in the creative process. This is especially true when working with children with disabilities.

Creative Play

One of the most important types of creative activity for young children is creative play. Creative play is expressed when children use familiar materials in a new or unusual way, and when children engage in role-playing and imaginative play. Nothing reinforces the creative spirit and nourishes a child's soul more than providing large blocks of time to engage in spontaneous, self-directed play throughout the day. Play is the serious business of young children and the opportunity to play freely is vital to their healthy development.

Even as early as infancy, play fosters physical development by promoting the development of sensory exploration and motor skills. Through play and the repetition of basic physical skills, children perfect their abilities and become competent at increasingly difficult physical tasks. Play fosters mental development and new ways of thinking and problem solving. Through block play, children are confronted with many mental challenges having to do with measurement, equality, balance, shape, spatial relationships and physical properties.

Through play, children are able to express and cope with their feelings. Play also helps relieve stress and pressure for children. They can just be themselves. There's no need to live up to adult standards during play. Play offers children an opportunity to achieve mastery of their environment. They control the experience through their imaginations, and they exercise their powers of choice and decision-making as the play progresses.

Play helps develop each child's unique perspective and individual style of creative expression. Play expresses the child's personal, unique responses to the environment. Play is a self-expressive activity that draws on the child's powers of imagination. Play is open-ended, free-form and children have the freedom to try out new ideas as well as build on and experiment with the old.

Play provides an excellent opportunity for integrating and including children with disabilities in your program. The opportunities play provides for

control and independence are important issues for any child but are especially important for these youngsters.

Pay attention to play, plan for it, and encourage it. Learn how to extend children's play through comments and questions. Stimulate creative ideas by encouraging children to come up with new and unusual uses of equipment. Try to remain open to new and original ideas, and encourage children to come up with more than one solution or answer. Be careful about over-restricting equipment and make sure to have play materials quickly available when children want them. Buy and use equipment in ways that encourage the use of imagination. Avoid toys and activities that spell everything out for the child and leave nothing to the imagination. Provide children with a good range and balance of equipment, and keep equipment exciting by changing it frequently or changing its location.

Creative Development

This area of learning includes art, music, dance, role-play and imaginative play.

Creativity is fundamental to successful learning. Being creative enables children to make connections between one area of learning and another and so extend their understanding. Creative development involves children exploring with all of their senses and being able to express themselves in a variety of ways.

This area of learning involves:

- exploring ideas of imagination
- communicating ideas and expressing feelings and moods
- Observation and representation.
- being involved in a wide range of creative and expressive activities – dance, art, drama, role-play, music, creating stories appreciating creativity of self and others

Jan –Eric & Bireen (1984) showed that men score high on a creativity test. Most probable explanation for this seem to be that these differences are not inherent but show cultural values that are manifested in differences of upbringing, educational possibilities, and freedom of action for the two sexes. The passive conformism that traditionally has been demands of girls is not beneficial to the development of a questioning, creative attitude. Some women are still “imprisoned” in the responsible agent for caretaking and home activities, which may not give room for the time and concentration that creative process demand.

Greenacres (1971) and Jafferman (1978) found that women sometime show difficulties in externalizing their inner creative process or have a lower need of achievement in creative endeavors(as cited in anwar,2004).

Correlates of Creativity

A longitudinal study was completed by Torrance (1981) on creativity. Data on the Torrance Tests of Creative Thinking were collected on each elementary student enrolled in two Minneapolis Schools starting in 1958. Torrance studied these same participants in 1979-1980, and asked them to complete two questionnaires, one of which had basic demographical information and a second which had an emphasis on subjects’ creative achievements. Torrance also had the subjects explain if any persons had influenced their creativity for either the positive or the negative. He created five checklists for creativity that included “Number of high school creative achievements, number of post high school creative achievements, number of creative style of life achievements, quality of highest achievements, and creativeness of future career image” (Torrance, 1981, p. 60). Correlations showed that the best predictor of creativity was the pursuit of a Child’s Future Career Image. A significant relationship existed between having a mentor and creative achievement. He also found that intelligence, age of marriage, number of children, and sex were not related to creativity scores (Torrance, 1981).

Tegano, Moran, and Sawyers (1991) characterized child creativity as including fantasy, divergent thinking, metamorphic thinking, conceptual tempo,

curiosity, personality, temperament, nonconformity, risk taking, and motivation. They found that teachers who provided materials and facilitated play activities helped to encourage creativity in young children. Moreover, they asserted that child creativity could be fostered by more playful teachers

Measuring Creativity

Creativity Quotient

Several attempts have been made to develop a *creativity quotient* of an individual similar to the Intelligence quotient (IQ), however these have been unsuccessful. Most measures of creativity are dependent on the personal judgement of the tester, so a standardized measure is difficult to develop.

Psychometric Approach

J. P. Guilford's group (1967), who pioneered the modern psychometric study of creativity, constructed several tests to measure creativity:

- Plot Titles, where participants are given the plot of a story and asked to write original titles.
- Figure Concepts, where participants were given simple drawings of objects and individuals and asked to find qualities or features that are common by two or more drawings; these were scored for uncommonness.
- Unusual Uses is finding unusual uses for common everyday objects such as bricks.

Building on Guilford's work, Torrance developed the Torrance Tests of Creative Thinking. They involved simple tests of divergent thinking and other problem-solving skills, which were scored on:

- **Fluency.** The total number of interpretable, meaningful, and relevant ideas generated in response to the stimulus.

- *Flexibility.* The number of different categories of relevant responses.
- *Originality.* The statistical rarity of the responses among the test subjects.
- *Elaboration.* The amount of detail in the responses. Creativity tests, the most popular method of assessment in empirical studies, are grouped as three broad categories. Personality tests, Biographical inventories & Behavioral assessment. They are discussed below.

Personality Test.

The first category includes traditional personality inventories from which creativity scales have been developed. For example, Gough's (1996) California Psychological Inventory, Cattell and Eber's (1968) Sixteen Personality Questionnaire. Gough and Heilbrun's (1965) Adjective checklist and Heist and Yonge's (1968) Omnibus Personality Inventory (Heist, 1968).

Biographical Inventories

These inventories include a collection of biographical account. Most of these were originally devised on an intuitive basis and refined through testing samples of individuals rated high on creativity and those rated low or average. For example Alpha Biographical Inventory was developed through extensive testing of NASA scientists (Taylor & Ellison as cited in Amabile, 1988). It includes several hundred items on childhood, interests and hobbies, notable experiences and so on. (Amabile as cited in Khan, 1999)

Behavioral Tests

In this category, tests developed by Guilford (1968) originally devised to tap the divergent thinking component in his structure of intellect theory have served as a model.

Guilford's unusual uses test, for example requires the subject to name as many uses as possible for a common object.



The most widely used test batteries used however, and the criteria against which many other creativity tests are validated, are the Torrance Test of Creative Thinking (TTCT) also called Minnesota Tests of Creative Thinking. (Torrance, 1988).

Social-personality Approach

Some researchers have taken a social-personality approach to the measurement of creativity. In these studies, personality traits such as independence of judgement, self-confidence, attraction to complexity, aesthetic orientation and risk-taking are used as measures of the creativity of individuals. Other researchers¹ have related creativity to the trait, openness to experience.

Rationale of the Study

Play is essential in the development of creativity. We can say that play and creativity is interlinked with each other. Creativity demands curiosity, and freedom of expression. Creativity is such an ability that sharpens human minds. Creativity produces a large number of ideas, facts and figures. Playfulness has been discussed by Lieberman (1977) as a stable dimension of personality, which has a fundamental relationship to creativity. If a child is a highly playful individual, then that child will create his or her own play world out of even the most sterile environment. Adults' playfulness is conceptualized as an individual trait propensity to define an activity in an imaginative, non-serious or metaphoric manner so as to enhance intrinsic motivation, involvement and satisfaction (Gylynn & Webster, 1992).

The primary focus of this study is to find out the role of playfulness in creativity among university students. For example, play is necessary to creativity (Craft, 2000). Many writers including Moyles (1994) have suggested that through play children first explore, and then use knowledge. They then recognize and subsequently solve, using it. Later they practice and revise the knowledge and skills involved for future use. Play, even that which is imitative or fantasy-based, therefore builds the child's confidence in being able to learn about their world.

Nina Lieberman (1965, 1977) was one of the first researchers to study playfulness with regard to divergent thinking. She hypothesized that kindergarteners who received higher rates on playfulness would also receive higher scores on divergent thinking. She studied 93 children who were enrolled in kindergarten classrooms. She asked teachers to rate the children for playfulness using The Playfulness Scale, interviewed the children in order to obtain scores on divergent thinking tasks, and tested intelligence through the use of The Peabody Picture Vocabulary Test. She concluded that playfulness and divergent thinking were significantly and positively related.

Play and creativity have been linked in numerous ways. Pretend play fosters the development of cognitive and affective processes that are important in

the creative act. Russ's (1993) model of affect and creativity identified the major cognitive and affective processes involved in creativity and the relations among them. Central to both play and creativity is divergent thinking. Both cognitive and affective processes in play have been related to divergent thinking in children. Quality of fantasy and imagination in play predicted divergent thinking over time. Divergent thinking itself was relatively stable over time. An important question is whether play can facilitate creativity. Play has been found to facilitate insight ability and divergent thinking. Studies have also shown that children can be taught to improve their play skills.

The relationship between playfulness and creativity has also been studied in the Japanese culture by Taylor and Rogers (Taylor, 1992; Taylor & Rogers, 2001) who observed 164 young children. Teachers rated all the children using the Child Behaviors Inventory (Rogers et al., 1998), the Test for Creativity Thinking-Drawing production (TCT-DP) and the children's drawings. Twelve children were then chosen to be studied using qualitative measures. Taylor measured the children's drawings for their artistic creativity. Children were asked to draw anything they wished during an art activity and results were calculated based on Torrance's scale for scoring. Drawings were judged for fluency, flexibility, originality, and elaboration. However, the qualitative data suggested that playfulness and creativity may co-occur (Taylor, 1992; Taylor & Rogers, 2001).

Craft (2000) argues that the early opportunity to play and playing are essential for developing creative adults. This does not mean leaving learn alone, but stimulating them in terms of engagement and environmental investigations. On the other hand, neither does it mean guided discovery along narrow predetermined lines (Beetlestons, 1998b as cited in craft). Playing with information, materials and ideas is a central feature of creative practice for people of all ages. However, 'play/playing' is now considered a highly valued strategy used to encourage creative endeavor.

METHOD

METHOD

Objectives of the Study

The objectives of the present research were as following:

- To see the role of playfulness in creativity among university students.
- To investigate the differences in the level of playfulness and creativity among student.
- To see whether students of natural and social sciences varies in playfulness and creativity.

Hypotheses

The hypotheses formulated for the present research were as followed.

- Students scoring high on playfulness will also score high on creativity.
- Men will score high on creativity as compared to women.
- Men will score high on playfulness as compared to women.

Definition of the Variable

Playfulness

Playfulness is a personality construct that consist of different behavioral dimensions namely spontaneity, expressiveness, creativity and love for fun, sense of humor, enjoyment for silliness, informality, and whimsicality (Schaefer&Greenber, 1997).

In the present research playfulness is measured in terms of scores of respondents on playfulness scale for adults developed by Mahmood(2002).High scores on this scale represents highly playfulness and vice versa.

Creativity

Creative process is that It is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the hand, and the material, events, people, circumstance of his life on the other hand. Theoretical and conceptual wrap and woof of creativity for heavy research is heavily borrowed from Guilford's (1968) structure of intellect. In his structure of intellect model Guilford proposed the existences of 120 separate abilities.

The abilities are defined by the possible combination of 5 kinds of operation that can be performed (cognition, memory, convergant production, divergent production, and evaluation), six kinds of product (units, class, relations, system ,transformation and implication and four kind of material (figural, symbolic, semantic and behavioral).Creative abilities involves a complex of mental factors and in particular, mental abilities which define divergent production as the generation of information from given information, where emphasis is on variety of output from the same source (innovation, originality, unusual syntheses or perspective).

Sample

Sample consisted of 60 university students 30 boys and 30 girls. Sample was taken from Quaid-i-Azam University, Islamabad. Two departments from social science and natural science were the selected for the administration of the test.

Instrument

Two instruments were used in the present study (1) playfulness scale for adults (Mahmood, 2002) and (2) test of creativity (Khan, 1999). The second instrument comprises of a test of creativity. Developed in its present form by, Khan. (1999).

Playfulness scale for Adults

Playfulness scale for adults was developed by Mehmood (2002). It is a 38 item, five point; likert scale. It consists of 35 positive and 3 negative items. Items nos, 18, 30 and 33 are negative items. All other items are positive. Responses categories range from strongly agree to strongly disagree. The subjects have to put a tick mark on one of the five alternative responses. This scale have five sub-scales namely (a) love of fun; (b) enjoyment of silliness; (c) sense of humor; (d) liveliness; (e) informality. These sub scales measure five dimension of playfulness' (see appendix B).

Dimension	Item Nos.
Love for fun	12,14,15,16,17,19,22,25,34,35,37,38
Enjoyment of silliness	24, 26, 27,28,29,36
Sense of humor	1,2,3,5,7,9,11,21
Liveliness	8,10,13,18,30,32,33
Informality	4, 6,20,23,31

Scoring of playfulness scale was done by assigning of value of 5 to strongly agree, 4 to some what agree, 3 to cannot say, 2 to somewhat disagree, 1 to strongly disagree. Reversrs scoring was done for negative item.

The alpha reliability of playfulness scale is .76. It is thought that this scale is highly reliable to measure the playfulness of adults. Three groups were made on the basis of playfulness scale, high, middle, and low. Middle group was ignored and compare high and low playful students on creativity test. This indicated that high playful students scored high on creativity.

Test of Creativity

This test consists of seven questions, 5 verbal and two non-verbals. All questions are open ended and respondent are at liberty to express their imaginations without any restriction. Items for this tests were driven from unusual uses (Guilford, 1968), the creative thinking test (Wallach&kogan, 1965), Torrance test of creative thinking (Torrance, 1988), and symbolic equivalent test (Barron, 1988) and adapted for indigenous population there are evidence that an abridged form of this test can be used without any serious loss of reliability (Ansari, 1976: Riaz, 1978; Sohaila, 1985). The alpha reliability of creativity tests is .82. It is thought that this scale is highly reliable to measure the creativity.(see appendix C)

Scoring System

Four measures of creativity were obtained.

1. Fluency
2. Flexibility
3. Originality
4. Elaboration

Q.No. 1 It taps ideational fluency and originality. Range of marks in each category is from 0 to 5.Total number of question are 1 to 15 and if a respondent associates his ideas, with a few omission, displayed spontaneity, symmetry and pertinence in ideas, he will score high on this part of the test..

This question covers two measure, fluency and originality,of creativity.Maximum score tat can be obtain is 10.

Q No .2 Asses fluency ,flexibilty and originality and it was driven from “Unusual uses test”.There are five items in this question and respondent who display profile ideational fluency,novelty,innovation and uniqueness in imagination score high on thias part of test Maximum score that can be obtain is 15.

Q No .3. This portion is derived from “Symbolic equivalence test” (Barron, 1984) fluency ,flexibilty and originality are asses I this part of tets.Maximum score that can be obtain is 15.

Q No 4. This portion adapted from just "suppose test" and assess fluency, flexibility and originality. Maximum score that can be obtained is 15.

Q no 5. In this part of test, subject gives title after reading a paragraph and it taps originality only. Maximum score that can be obtained is 5.

Q No 6. This non verbal part of tests consists of nine geometrical patterns. Subject is supposed to elaborate these patterns the way he likes in this part of test. Fluency, flexibility and originality and elaboration is assessed. Maximum score that can be obtained are 20.

Q No 7. This non verbal part of tests consists of 20 circles. It is scored for fluency, by the number of circles used; for flexibility, seeing how many different ways these circles have been utilized; originality by seeing who uses these circles in most original manner and for elaboration, by seeing to what extent the detail of the drawn motifs are highlighted. Total score in this part of this test is 20 and overall score in "test of creativity" is 100 (see annexure D)

Procedure

The test of creativity developed and adapted by Khan (1999), originally based on Guilford (1968) modal intellect was used in the present study. Alpha reliability was not calculated again.

Sample was approached and briefed about the purpose individually, and the nature of the research being carried out. Both tests were attached with each other. They were requested to answer honestly. They were being assured of confidentiality of their responses and were requested to respond seriously. Test of creativity was administered under the supervision of researcher. The scoring was carried out according to the scoring system. The scores were subjected to statistical analysis for testing the hypothesis of the study.

RESULTS

RESULTS

In order to fulfill the objectives of the study and to test formulated hypotheses, a series of statistical analysis was done. Following are the result of the study obtained after carrying out the analysis on data ($N=60$) through SPSS.

Playfulness and Creativity

Table 1

Mean Standard deviation and t-value for high and low playful student on creativity. (N=40)

Scales	Low playful student (n=20)		High playful students (n=20)		t-value	p - value
	M	SD	M	SD		
Creativity	48.45	8.35	56.95	12.91	2.42	.018

df=38.

Table 1 shows that the mean score and standard deviation of high and low playfulness students on creativity. It is also showing that the result of t-test for comparing both on creativity test. This result suggests a significant difference in scale score for high and low playfulness students on creativity.

Table 2

Mean Standard deviation and t- value for high and low playful student on dimensions of creativity. (N=40)

Dimensions of Creativity	Low playful student (n=20)		High playful students (n=20)		<i>t-value</i>	<i>p - value</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Fluency	16.00	2.38	17.45	3.56	1.513	.139
Flexibility	11.60	4.891	13.85	3.76	2.12	.040
Originality	15.65	2.99	18.85	5.07	2.43	.020
Elaboration	5.20	1.88	6.80	1.79	2.75	.009

df=38

Table 2 shows that the mean score and standard deviation of high and low playful students on dimension of creativity. It is also showing that the result of t-test for comparing both on creativity dimensions. This result suggests non-significant difference on fluency, and significant differences on flexibility, originality, and elaboration.

Gender and Creativity

Table 3

Mean, Standard deviation and t- value for boys and girls on creativity (N=60)

Scales	Boys (n=30)		Girls (n=30)		t-value	p - value
	M	SD	M	SD		
Creativity	48.63	10.27	54.23	11.40	1.999	.050

df=58

Table 3 shows that the mean score and standard deviation of boys and girls on creativity. It is also showing that the result of t-test for comparing both on creativity. This result suggests non-significant gender difference on creativity.

Gender and Playfulness

Table 4

Mean, Standard deviation and t- value for boys and girls on playfulness (N=60)

Scales	Boys (n=30)		Girls (n=30)		t-value	p - value
	M	SD	M	SD		
Playfulness	126.56	30.32	136.00	20.20	1.418	.162

df=58

Table 4 shows that the mean score and standered deviation of boys and girl on playfulness.It is also showing that the result of t –test for comparing both on playfulness.This result suggest non significance gender difference in playfulness.

Creativity among students of social and natural sciences students

Table 5
Mean Standered deviation and t-value for social and natural sciences students on creativity test. (N=60)

Scales	social sciences (n=30)		Natural sciences (n=30)		t-value	p - value
	M	SD	M	SD		
Creativity	49.10	10.61	53.76	11.30	1.648	.105

df=58

Table 5 shows that the mean score and standered of natural and social sciences studentson creativity It is also showing that the result of t –test for comparing both on creativity This result suggest non significance difference in creativity test score for student of social and natural sciences.

Playfulness among students of social and natural sciences students

Table 6

Mean Standard deviation and t-value for social and natural sciences students on playfulness. (N=60)

Scales	social sciences (n=30)		Natural sciences (n=30)		t-value	p - value
	M	SD	M	SD		
Playfulness	125.76	19.18	136.80	30.70	1.669	.100

df=58

Table 6 shows that the mean score and standard deviation of natural and social sciences students on playfulness. It is also showing that the result of t-test for comparing both on playfulness. This result suggests non-significant difference in playfulness scale score for students of social and natural sciences.

DISCUSSION

DISCUSSION

The present study aimed to investigate the role of playfulness in creativity among university students. Further it also investigated gender differences on playfulness and creativity test. Two scale were used in this research were playfulness scale for adults (Mahmood, 2002) and creativity tests (Khan, 1999). Playfulness is personality constructs as the adult's predisposition to engage in playful activities and interaction rather than focusing on specific behavioral elements within certain time frame and physical context. Playfulness is known to be associated with several variables including the following: (a) creativity (e. g. Lieberman 1965, 1977; Taylor, 1992; Taylor & Rogers, 2001), (b) gender (Barnett, 1991).

In the presents research some hypotheses were made on the basis of researches on playfulness and creativity.

Results in Table 1 show the significant difference in low and high playfulness score compare to creativity which support first hypotheses "Students scoring high on playfulness will also score high on creativity". because playfulness are closely related to creativity. So it can be said that high playfulness contribute to high creativity. Nina Lieberman (1965, 1977) was one of the first researchers to study playfulness with regard to divergent thinking. She hypothesized that kindergarteners who received higher rates on playfulness would also receive higher scores on divergent thinking. Lieberman studied 93 children who were enrolled in kindergarten classrooms in New York City. She asked teachers to rate the children for playfulness using The Playfulness Scale, interviewed the children in order to obtain scores on divergent thinking tasks, and tested intelligence through the use of The Peabody Picture Vocabulary Test. She concluded that playfulness and divergent thinking were significantly and positively related.

Play and creativity have been linked in numerous ways. Pretend play fosters the development of cognitive and affective processes that are important in the creative act. Russ's (1993) model of affect and creativity identified the major cognitive and affective processes involved in creativity. Central to both play and creativity is divergent thinking. Both cognitive and affective processes in play have been related to divergent thinking in children. Quality of fantasy and imagination in play predicted divergent thinking over time. Divergent thinking itself was relatively stable over time. Play can facilitate creativity. Play has been found to facilitate insight ability and divergent thinking.

Result in Table 2 shows non significance differences on fluency and shows significance differences on flexibility, originality and elaboration. This result indicated that high playful student are more creative.

Results in Table 3 show the non significant gender difference on creativity score does not support second hypotheses "men will be more creative as compare to women" but some researches prove that women are more creative as compared to men. The presents resulted indicated that women are more creative as compared to men.

It has been suggested that women are more responsive and responsible as compared to men & women are more concentrantly perform any task which they are given. In our society naturally men are dominated authority they just look up problem sloution and women have different exposure in daily life which they make different and unique as compared to men & they make different work in home make us mre creative.

Barnett and Kleiber (1982) examined the relationship between playfulness and divergent thinking task scores in young children while taking into account both intelligence and gender differences. They assessed 106 children in both day care and kindergarten classrooms using Lieberman's (1977) Playfulness Scale, the Peabody Picture Vocabulary Test, and the Novel Uses Test created by Torrance. Correlations between playfulness and divergent thinking, were significant, a

finding that was similar to Lieberman's original findings. However, when taking into account the intelligence factor, Barnett and Kleiber found little or no relationship between playfulness and divergent thinking. They then expanded on these findings and took gender differences into account with playfulness, divergent thinking, and intelligence and concluded that gender differences make an impact on the results. Playfulness and divergent thinking were related among females but not among males (Barnett & Kleiber, 1982).

It was hypothesized that in literature review we have a mixed result and arguments about gender differences in creativity. According to Maslow (1971) women appear to be more interested in creative process than in its end product. Women sometime show difficulty in externalizing their inner creative processes or have a lower need of achievement in creative endeavor.

Considering the biological basis of creativity Herrman (2001) explains that Joseph Bogen who conducted experiments on "split brained patients" that "left Hemisphere is more logical, analytic, quantitative rational and verbal where as right hemisphere was revealed to be conceptual, holistic, Intuitive non-verbal and imaginative, Creativity is considered to be the "whole brained activity" which means creativity is a mental process utilizing all of the brain's specialized capabilities. The significant link to the right brain is pretty clear. The specialized characteristics of the right hemisphere make it the seat of curiosity, synergy. Experimentation, metaphoric thinking, Playfulness, solution finding artistry, flexibility, synthesizing and in general risk taking. In addition, it is likely to be opportunistic, future oriented, welcoming of change and to functions as a center of our visualization capability. Women tend to have an inclination to use more their left brain, where men use more of their right brain (as empirical evidence suggests) so. Both genders differences sufficiently in their expression of creativity and competence.

Results in Table 4 show non significance gender difference on playfulness which does not support third hypotheses "Men will score high on playfulness as compared to women". Total item in playfulness scale is 38. Total

score on playfulness scale is 190 and cut of score on this scale is 95. Men score on this scale is 126 and women score on this scale is 136 which is above the cut off score and show that both represent high score on playfulness scale. So the result show non significance gender differences which mean some other factor contribute in playfulness.

Glynn and Webster (1992) created The Adult Playfulness Scale (APS) specifically for use in studies being conducted in the workplace. The APS taps five characteristics including, spontaneity, expressiveness, fun, creativity, and silliness. The Five studies included techniques such as asking participants to explore a new spreadsheet program (two of these were completed), completing questionnaires in order to assess individual traits, completing a questionnaire while studying how to make decisions, and solving word puzzles. A significant relationship to playfulness occurred with task evaluations, perception, involvement, and performance. The study showed no significant relationship between gender and playfulness (Glynn & Webster, 1992, 1993).

Results in table 5 and 6 show non significance differences between social and natural sciences students. Students of natural sciences showed higher score on playfulness and creativity as compared to social sciences.

It has been observed that the students of the natural sciences perform better as compare to the students of social sciences because of different nature of their subjects and the very buildup of the personality on the very attributes of the natural sciences subjects. These differences may be viewed in the following in a more specific, logical and rational way: -

Minds based on natural sciences are more analytical, logical, diagnostic, investigative, critical, methodical, questioning and reason based. These minds usually work on sound footings, accurate observations & exact results, whereas on the other hand minds built on social sciences basis, have direct connectivity with the minds & behaviours of people. Each & every individual does have a unique identity and varies altogether to another identity, irrespective of the fact whether

these individuals are segmentation dimensions of a unique hub or axis. Human mind or an individual is an embodiment of flesh, blood and bones and each and every new or the same environment & situation may bring different view points and results thereon. So the students of social sciences do not harp after, look up or focus on the exact, rational, logical and reasoned based results, rather they do expect different result every time. These minds do not dare or make effort to go or work on analytical, creative results. These minds rather keep on seeing and looking onto the things as they are and appear. One analysis may not bring unique result the second time too.

Time and again analytical process of the students of natural sciences makes minds creative, whereas mere study of human minds and their behavioural presentation may not make mind creative rather these minds become less analytical, logical, as one in an identical situation if abuses another, that person in same identical situation may take it no more serious at all, so creation of one logic for one behaviour may bring a bad result on the second time.

Minds of the students of Natural Sciences have been creating certain new ideas on the basis of which certain new inventions have been there in this world, whereas minds based on social sciences may go on flight of imagination to Mars but without any rational and practical creative basis, though the flight of imagination may be called a creativity but the very next flight to the Mars of the same person may locate its way to Mars through different route.

Conclusion

The present study aimed to investigate playfulness and creativity among university students. Result showed that high playfulness may lead to high creativity. High playfulness students scored high on creativity which means that playfulness and creativity are closely interrelated.

Data analysis regarding gender differences on creativity revealed significant gender differences in creativity test. Female score high on creativity as compared to men. And female score high on playfulness as compared to men.

A comparison of the students of the social and natural sciences revealed a non-significance difference on creativity, and significance differences on playfulness scale. Students of natural sciences scored higher on playfulness scale.

Limitation of the study.

- The study was conducted on a small sample of students and data was taken only from Quaid -i- Azam University, hence the findings are difficult to generalize across the whole population.
- The present study shows the gender differences exist in creativity, but it does not explain the exact cause of the differences found. Simply because a large number of other factors can also contribute to these differences in creativity and playfulness.
- Another limitation of the present study is lack of demographic information. Reference to demographic variables, certain aspects like family size, parental education, occupation and socioeconomic status were not focused.

Suggestion.

Keeping in mind the limitation of the present research some suggestion can be proposed to further researchers who intend to do research in similar area.

- Sample size should be increased and must be representative to increase the generalizability of the result.
- Data is taken from different university, and then it would make generalization of the study more convenient.
- Further study can be conducted by using random sampling to get more significant result for making generalization.

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APPENDIXES

DEMOGRAPHIC INFORMATION SHEET

Gender Male/Female

Semester of M.Sc: _____

Department _____

Playfulness Scale for Adults

Following statements reflect your life style. Please read them carefully and indicate on a five point rating scale the degree to which these statements apply to you. In answering each item, put a tick mark (✓) on one of five alternative responses.

#	Statements	Strongly disagree	Somewhat disagree	Can not say	Somewhat agree	Strongly agree
1	Witty comments of others make me laugh.					
2	Without humor there is no life					
3	Spontaneous people fascinate me					
4	Sometimes I change my voice to make it funny					
5	Laughing helps fading the bitter memories of life.					
6	I would love to go out and play in rain					
7	Humor makes us happy					
8	I think life is more like a comedy than a tragedy.					
9	I prefer watching comedy programs to serious ones					
10	I am generally known as a lively and humorous person					
11	I often love to listen to jokes from others.					
12	I love to join fun-seeking activities with friends					
13	I like window shopping					
14	I like to smile and laugh as much as possible during the day					
15	I like to make friends who are fun-loving					
16	I like to find ways to have fun					
17	I like to be found dressed up informally					
18	I like serious conversation					
19	I like life in which there is a place for fun					
20	I imitate people's way of talking and walking.					
21	I get along well with humorous and witty people					
22	I feel pleasure and excitement when I sing and dance with others.					

#	Statements	Strongly disagree	Somewhat disagree	Cannot say	Somewhat agree	Strongly agree
23	I enjoy playing hide and seek with kids					
24	I enjoy making silly/funny faces in front of the mirror					
25	I enjoy going out on picnics or parties/fun seeking programs					
26	I enjoy creating silly ideas and acting upon them					
27	I enjoy acting like a child					
28	I enjoy acting a bit crazy at times.					
29	I do not hesitate to join others even in childish activities.					
30	I consider myself to be serious type of person					
31	I can amuse my friends with jokes					
32	I am known as fun loving person in my family					
33	I think life is too precious to be wasted in having fun					
34	I am always prepared to intimate fun activities					
35	I always manage to make room for fun					
36	I always enjoy being odd and silly					
37	I prefer to have jolly and humorous					
38	Fun adds color to life.					

TEST OF CREATIVITY

Read instructions carefully before starting each question in this test. There is not right and wrong answer. Use your imaginations as freely as possible and try to be as productive as you can. You are required to complete every part of each question.

Do not start test until you are told.

Given information will be kept confidential and will be used for research purpose only.

Q.No.1. In this test you will try to relate your ideas to one another sequentially. Fill these spaces between the words below so that each word is related logically to the word following it. Please indicate the relationship of two words further if it is necessary.

EXAMPLES

- | | | | |
|-----------|-----------|----------|----------------------------------------|
| a. Mosque | Shahjehan | Engineer | (Famous for construction of buildings) |
| b. Folk | Music | Sitar | Classical Painting |
| c. Jet | Engine | Machine | Iron Cloth Cotton |

1. Old _____ Shop
2. Free _____ dream
3. Fish _____ Fall
4. Smart _____ guy
5. Expense _____ pain
6. Iron _____ _____ block
7. Sleep _____ _____ cave
8. White _____ _____ _____ school
9. Brain _____ _____ _____ computer
10. Power _____ _____ _____ communication
11. Black _____ _____ _____ Court
12. Shell _____ _____ _____ Fight
13. Nuclear _____ _____ _____ Temperature
14. Blank _____ _____ _____ Control
15. Nose _____ _____ _____ Time

Q.No.2. List below is five objects. Your task is to write down as many different uses as you can for each object. For instance the object "Bricks" is used (1) building material, (2) a pillow, (3) can be thrown on enemy, (4) can be thrown in well/river to check its depth, (5) can be put behind the tyre of motor car while it is parked on slops, (6) head stone grave, (7) to draw rectangle etc.

1. Newspaper

2. Human Ear

3. Ceiling Fan

4. Empty bottle of soft drink

5. Pair of eye glasses

Q.No. 3. In this test you have to write metaphors or symbolically equivalent images

FOR EXAMPLE

Stimulus Image: First rain after long spell of heat.

Equivalent Images: i) Discover of oasis after tiring journey in Sahara.
 ii) Birth of Prophet Muhammad (PBUH) after long period
 of ignorance.
 iii) Meeting one's beloved after a stressful interval.

1. (Stimulus Image) A candle burning low.

Equivalent Images

- i)
- ii)
- iii)

2. (Stimulus Image) Man is alone in Universe.

Equivalent Images

- i)
- ii)
- iii)

3. (Stimulus Image) Empty bookcase

Equivalent Images

- i)
- ii)
- iii)

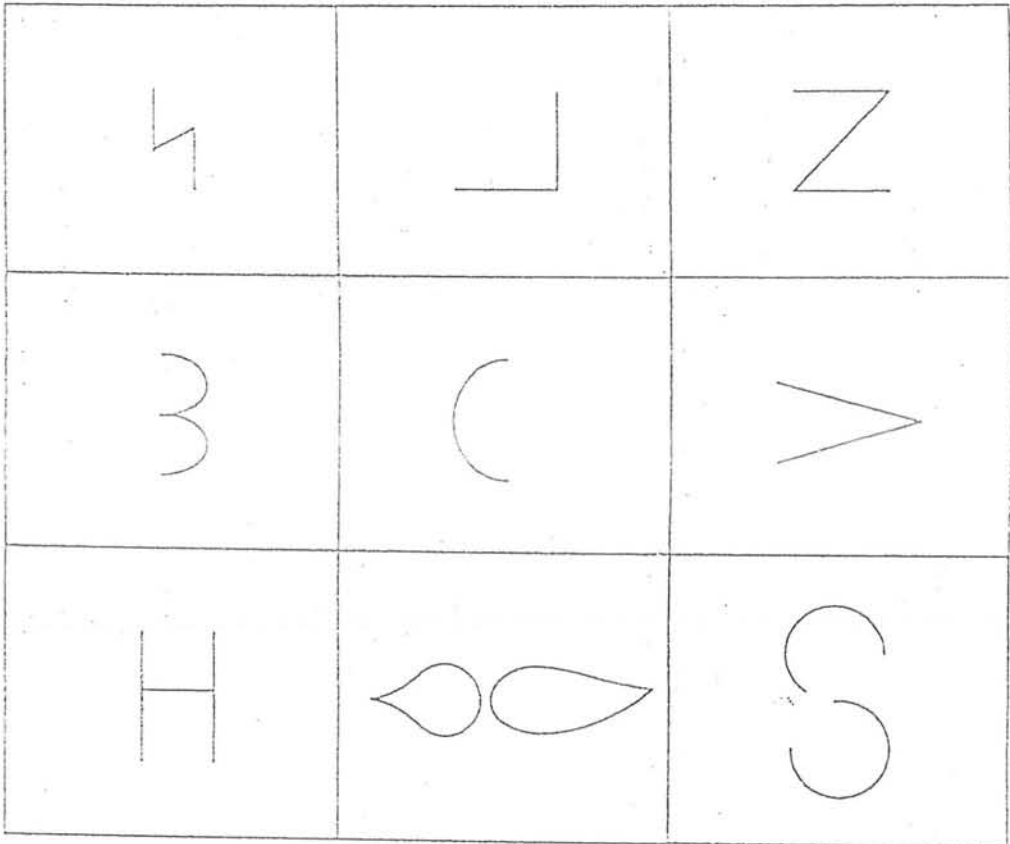
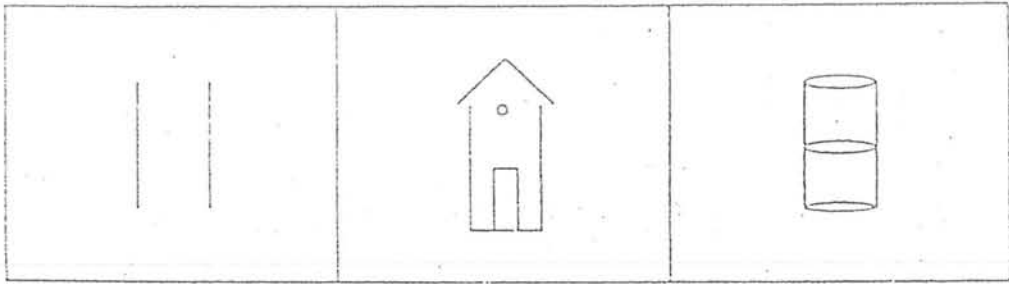
Q.No.4 What would happen if man could become invisible at will?

Q.No 5. Read the paragraph carefully and give it an appropriate title.

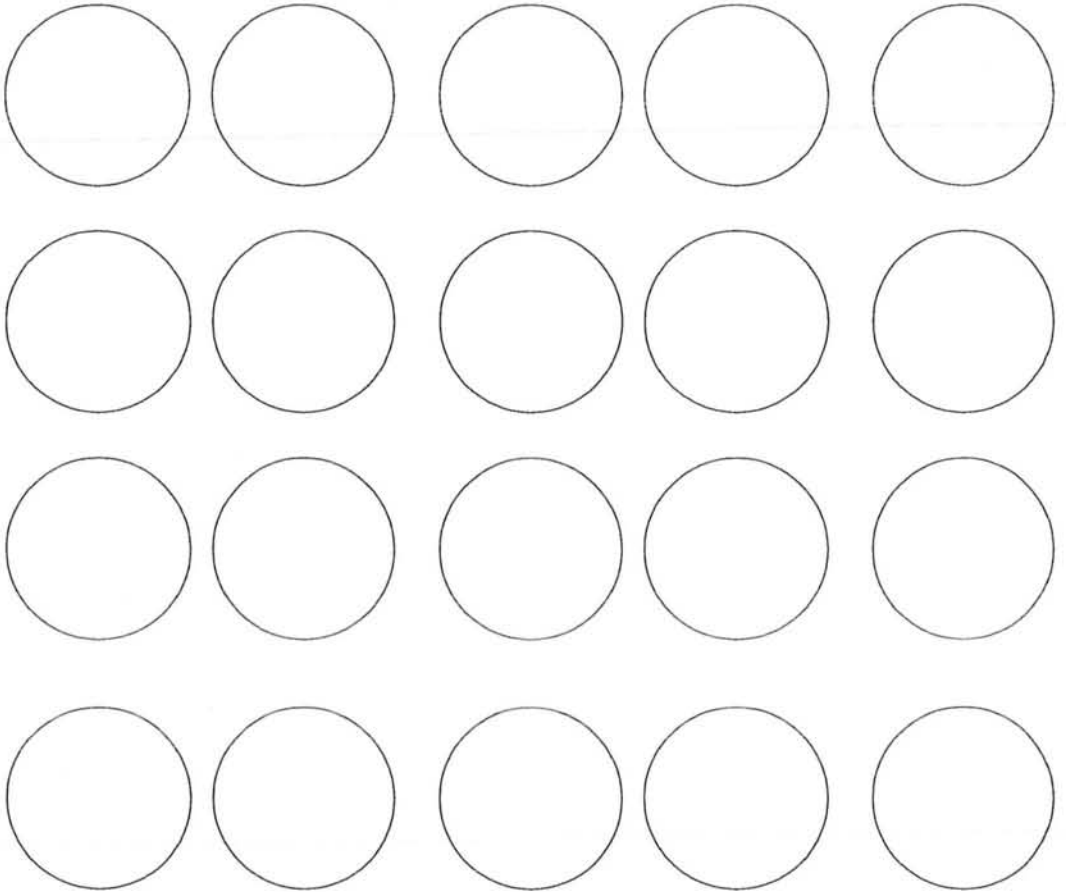
“All life represents a risk, and the more lovingly we live our lives the more risks we take. Of thousands may be even millions of risks we take in lifetime, the greatest is the risk of growing up. Growing up is the act of stepping from childhood in to adulthood. Actually it is more of a fearful leap than a step and is a leap that many people never really take in their life times.”

Title: _____

Q.No.6. User your pencil/Ball point to elaborate these simple figures in any way liked example



Q.No.7. In five minutes see how many objects you can make from the circles below. A circle or more than one circle should be main part of what ever you make. With you pencil / ballpoint, you can add lines in the circles to complete your picture. Your lines can be inside the circle, out sides the circle, or both. Try to think of things that no one else can think of. Add labels or Title on each drawn object if necessary.



TOTAL SCORING SHEET FOR TEST OF CREATIVITY

Name _____

Department _____

Item	Fluency 0-5	Flexibility 0-5	Originality 0-5	Elaboration 0-5	
1	F	-	O	-	
2	F	X	O	-	
3	F	X	O	-	
4	F	X	O	-	
5			O		
6	F	X	O	E	Grand Total
7	F	X	O	E	
Total	30	25	35	10	100

F=Fluency
X=Flexibility
O=Originality
E=Elaboration