REVIEW OF LITERATURE

Creativity has been of interest for researchers due to the fact that it has always been in dire demand. Since past, there are stories and tales of creative works of sculpture, art, drama, science and fiction and their vital applicability for mankind. Applicability might have been in aesthetic value, entertainment, and war, engineering or medical fields. Earlier researchers focused on creativity from different perspectives and possible reasons are the theoretical orientation of the researcher, the environmental factors, and view of creativity as one-dimensional concept. Although researchers were studying creativity from different perspectives with different dimension but they had a separatist approach not collaborated, multidimensional and multifaceted. Multidimensional means it is not creativity- it’s creativities, i.e., scientific creativity, artistic creativity, historical creativity, personal creativity, cognitive and affective creativity and so on. Multifaceted means other variables related to creativity, such as personality, cognition, cognitive styles, and motivation and, environmental and socio-cultural variables.

Keeping in view the foregoing discussion the present research work focuses on bi-dimensionality of creativity i.e., novelty and meaning types of creativity, personality (neuroticism, extraversion, openness, agreeableness, conscientiousness and intelligence) and field-dependent-independent cognitive styles variables related to it with the aim of exploring the possible relation of these variables with creativity and to find differences amongst these variables on the basis of high-low meaning type of creativity and, high-low novelty type of creativity.

For the present research the literature has been presented under following headings:

1. Creativity and personality
2. Creativity and intelligence
3. Creativity and field-dependent-independent cognitive styles
2.1 CREATIVITY AND PERSONALITY

The relation between elements and environment basic for creative performance in different domains is necessarily complex and consequently the study of trait or cognitive ability correlates in isolation could be misleading and lead to non-replicable results (Batey, 2007). Some of the researchers investigated the connection between personality and particularly visual art (Carroll & Enrich, 1932; Child, 1962, 1965; Eysenck, 1940; Juhasz & Paxson, 1978; Robertoux, Carlier, & Chaguiboff, 1971; Rosenbluh, Owen, & Pohler, 1972; Tobacyck, Myers, & Bailey, 1979; Wilson, Ausman, & Matthews, 1973). Gabora (1999) stated that creative processing required a person to shift cognitively from associative thinking to cause and effect thinking.

Creativity is multi-faceted and there is increasing consensus amongst researchers that creativity in the individual will be reliant upon multiple components (Amabile, 1983, 1996; Guilford, 1950; Woodman & Schoenfeldt, 1989). These components include cognitive ability, personality factors, cognitive style, motivation, knowledge and the environment, both as a source of stimulation (Dodds, Smith, & Ward, 2002; Moss, 2002) and evaluation (Runco, 2004). Eysenck (1995) defines creativity as a latent trait underlying creative behaviors and that creative achievement/performance is a combined function of personality, cognitive and environmental variables.

Broadly speaking, there are two views about personality dimensions related to creativity - positive and pathological. The positive view has been proposed and supported by humanistic and existential psychologists whereas the rest of the schools of psychology include pathological aspect as one of the important personality traits of creativity. The schizophrenia spectrum has tended to display an “inverted-U” relationship with creativity. That is, the presence of some schizotypal features are associated with heightened creativity, whereas, further, along the schizophrenia spectrum, toward frank schizophrenia, the relationship is attenuated. “Positive” schizotypal traits (such as unusual perceptual experiences and magical beliefs) have been found to be of particular relevance to artistic creativity, whereas “negative”
schizotypal traits (such as physical and social anhedonia and introversion) have been related to mathematical or scientific creativity (e.g., Nettle and Clegg, 2006). Bentall et al. (2001) found that schizotypy may play a role in determining creative pursuits, but does not contribute directly to divergent thinking. Findings by O'Reilly et al., (2001) are suggestive of the fact that schizotypy plays a role in determining creative ideas. Barrante (2004) found that not severe and acute insanity that is related to heightened creativity, but the personality roots and soft manifestations of both schizophrenic and bipolar psychoses. The affective and cognitive, variables associated with schizotypic and hypomanic personalities may be preferentially related to different kinds of creative works, such as the sciences and arts respectively.

Nelson & Rawlings (2010) using a sample of artists found that artists were elevated on “positive” schizotypy, unipolar affective disturbance, thin boundaries, and the personality dimensions of Openness to Experience and Neuroticism as compared to norm data. Reuter et al. (2004) found sensation seeking dimension of the Affective Neuroscience Personality Scales was related to creativity. In a study conducted by Gelade (2002) it has been found that creativity is negatively correlated to neuroticism. Feist (1998) in a comparative study on personality traits made on 3 sets of samples: scientists versus nonscientists, more creative versus less creative scientists, and artists versus non-artists, creative people are found to be more open to new experiences, less conventional and less conscientious, more self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive. Out of these, the largest effect sizes were on openness, conscientiousness, self-acceptance, hostility, and impulsivity.

Seemann et al. (2005) found that individuals who were more reactive (protective of personal freedom when that freedom seems threatened) were less agreeable, but more open and extraverted. Kelly (2006) found that there is substantial correlation between extraversion and creativity. Kelly (2004) found among female college students that creativity is correlated with openness to experience. Strong et al. (2007) found that neuroticism/cyclothymia/dysthymia and
openness have differential relationships with creativity. Srivastava and Ketter (2010) in their study revealed that personality/temprament measures—the neuroticism, extraversion, and openness Personality Inventory (NEO) contribute to enhanced creativity in individuals with bipolar disorder. Rawlings et al., (1998) found a relationship between creativity, openness to experience and psychoticism. Eysenck (1993, 1995) found psychoticism as the trait most closely linked to creativity. It has been found that a positively linked personality factor with creativity is openness to experience (Furnham & Chamorro-Premuzic, 2004a, 2004b).

Various Big Five researchers have found creativity associated with the high Openness, low Agreeableness, low conscientiousness and high neuroticism (Batey, 2007). It can be conceived that people who are not categorized mentally ill, but show subclinical hypomania may be more creative (Lloyd-Evans, Batey, & Furnham, 2006). Meta-analytical studies have shown that Neuroticism, Extraversion and Openness are positively related to creativity, whilst Agreeableness and Conscientiousness are negatively related (Feist, 1998). Divergent thinking fluency has been demonstrated to be related to extraversion and openness (positively) and (negatively) agreeableness (Batey et al., 2009; Chamorro-Premuzic, & Reichenbacher, 2008; Furnham, & Bachtiar, 2008). Rated divergent thinking has been found to be allied to Neuroticism and Agreeableness (negatively) and also to Extraversion and Openness (Furnham et al., 2009). Extraversion and openness have been shown to be positively related to creativity when assessed using inventories of creative achievement (Carson et al., 2005). Self-rated creativity has been shown to be predicted by Emotional Stability (opposite extreme of neuroticism) and openness (Furnham et al., 2008). Openness and extraversion are positively correlated with creativity (Batey, Furnham, & Safiullina, 2010; Chamorro-Premuzic & Reichenbacher, 2008; Feist, 1998; Furnham & Crump, et al., 2009). Conscientiousness (Feist, 1998) and Neuroticism (Chamorro-Premuzic & Reichenbacher, 2008; Furnham & von Stumm, et al., 2009) have also been shown to correlate with creativity. Creativity correlates with openness and extraversion, and
rarely conscientiousness and neuroticism correlate (e.g. Kaufman, Cole, & Baer, 2009; Silvia et al., 2011).

Silvia et al., (2009), reported significant correlations between Openness and creativity but openness was not related to mathematics/science based creativity. Significant correlations were reported between openness and artistic production (Chamorro-Premuzic & Furnham, 2004a; b; Feist & Brady, 2004;). Similar results were found by other eminent researchers also (Furnham & Avison, 1997; McCrae, 1987; McCrae & Costa, 1997; Rawlings, 2000; Rawlings et al., 1998). Correlations between Conscientiousness and art judgments have been shown to be both positive and negative (Furnham & Rao, 2002). Neuroticism has been shown to be positively correlated with preference for abstract and pop art (Furnham and Walker, 2001b) whereas agreeableness has been found to be correlated with a lesser preference for pop art (Furnham & Walker, 2001a) and creativity and openness to experience were found to be correlated (McCrae, 1993; Shiner, 1998). Extraversion, openness and narcissism were positively correlated with creativity (Furnham, 2013). Converging data suggest relationships between cyclothymia and creativity (Kretschmer, 1931; Andreasen, 1987; Akiskal and Akiskal, 1988; Richards et al., 1988). For example, in a study of diagnostically heterogeneous psychiatric outpatients, Akiskal and associates found that compared to control patients from similar clinical settings, architects and artists had three- and four-fold increases in rates of cyclothymia, respectively (Akiskal et al., 2005a,b).

In a study conducted by De Sanctis and Poole (1994) it was found that individual differences have a significant predictable influence on achievement, while research on individual differences has declined (Garfield et al. 2001). Roe (1946) in her study of successful artists found that they were extremely hard workers and had non-aggressive personalities, and were emotionally passive. Bloom (1963) studied outstanding scientists and found that these individuals also had tremendous amount of energy, had difficulty in establishing warm relationships with other people, and tended to retreat from a personal and social world into a world of ideas and objects. Barron and Harrington (1981) revealed that individuals high on creativity showed
attraction to complexity, high energy, independence of judgment, self-confidence, and ability to solve antonyms. Pucarin-Cvetković et al. (2011) in a review article revealed that some classical composers suffered from organic diseases, while others complained of mental disturbances. However, in spite of their disorders, the intensity of their creativity mostly remained intact. Furnham et al., (2013) in a study conducted on 207 subjects, found that extraversion, openness and narcissism were significantly positively correlated with creativity.

In study of sample of 69 students Stoneham and Caughtrey (2009) disclosed an inverted-U shaped relationship in which high and low-schizotypy groups were consistently faster than medium schizotypy groups where as Claridge & Blakey (2009) in another study found that positive schizotypy was correlated with different styles of creativity, and also revealed that affective temperament was correlated with both creativity styles and scores of divergent thinking. In a formal diagnostic exercise conducted by Murphy (2009) on Salvador Dali, the well-known Surrealist artist, was found to meet parameters for several DSM Cluster A and Cluster B personality disorders and for psychotic illnesses as well where as Figueroa (2005) studied the case of novelist Virginia Woolf (who committed suicide at the age of 59), and tried to determine the relationship between her creativity and her insanity and found that she was moderately stable as well as exceptionally productive from 1915 until she committed suicide in 1941. Virginia Woolf created little or nothing while she was unwell, and was productive between attacks. A detailed analysis of her own creativity over the years reveals that her illnesses were the source of material for her novels. Schuldberg (2005) in a study found that the psychoticism scale is related to both creativity and sub-clinical symptomatology.

Wills (2003) suggests psychopathology (mood disorders and alcohol-related disorders) in eminent jazz musicians. Smith and Tegano (1992) investigated the relationship between self-image and creativity in late adolescence and found that more creatively scoring subjects exhibited better psychosocial functioning on six of the eleven self-image dimensions measured than the less creatively scoring subjects. Concomitant with their more heightened self-assurance was subjects' expressed greater confidence in social competence. The findings are contrary to the profile that
depicts creative individuals as socially and emotionally deficient. De Caroli and Sagone (2009) found a modest and negative relation of production of titles with emotional instability and conscientiousness with flexibility. Miller and Tal (2007) in a study conducted on 225 students of University of New Mexico disclosed that openness and intelligence predicted reliable observer ratings of verbal and drawing creativity, but schizotypy did not.

A perusal of the studies makes it easy to comprehend the complexity of relationship between personality and creativity. Considering the importance of discussion of the relevant variables in the previous chapter and present review, a relation between personality dimensions and types of creativity can be conceptualized i.e., there is possibility of positive relationship between openness to experience and meaning type of creativity, between neuroticism and novelty type of creativity.

2.2 CREATIVITY AND INTELLIGENCE

According to Morgan (1953) the universal factor for creativity is novelty. Being novel means having originality and newness, there must be something fresh to the idea generated. Sternberg and Lubert (1995) proposed that novelty must be accompanied by appropriateness for something to be considered creative. Novelty can be integration of any two or more different things or thoughts. Sternberg (2001) proposed that there is a dialectical relationship between creativity and intelligence and wisdom. Intelligence is necessary for there to be creativity because not only is generation of novel ideas necessary but the critical analysis of novel ideas is also necessary. To be able to generate novel ideas, there must be higher intelligence.

The relationships between creativity and intelligence have been investigated ever since differences had been reported in these correlations by Torrance (1962) and Yamamoto (1964). Studies conducted by Preckel et al., (2006) and Kim (2005) have also indicated an absence of these variations. A study conducted by Johnson et al. (1993), on preschool children, indicated that creativity is significantly related to intelligence when IQs were less than 120 but was not related-at higher levels. However, the practical significance of the significant relations was small. Also,
Runco and Albert (1986) states that intelligence and creativity are related, using the threshold theory. Later this theory assumes that there is a “minimum level of intelligence (the lower threshold) below which the person cannot be creative, they (creativity and intelligence) are related, but only at certain level of ability (Runco, 2007).

Correlational studies between intelligence and creativity have been confusing. Flescher (1963) obtained low but negative correlations between some measures of creativity and intelligence. Another investigation reported that under conditions of stress, none of the correlations between creativity and intelligence were significant and, both, negative and positive correlations were observed. In a study conducted by Rindermann and Neubauer (2004), it has been revealed that processing speed, intelligence and creativity are related significantly, yet no direct influence of processing speed on school performance has been found. Studies have also investigated intelligence thresholds in the relationships involving creativity, intelligence and academic achievement (Torrance, 1959, 1960 and Getzels and Jackson, 1962).

While the majority of these studies indicate positive correlations between creativity and academic achievement, some did not. These studies were mainly based on American samples. Researchers have long debated the nature of the relation between creativity and intelligence. Some have said that creativity and intelligence are two completely different and independent constructs, an assumption underlying earlier research in the field (e.g., Getzels & Jackson, 1962). Others have said that they are distinct but related constructs (Sternberg, 2000). The relation between creativity and intelligence is a venerable problem in the psychology of creativity. Guilford (1950, 1967) made seminal contributions to both fields, and the overlap between creativity and intelligence received book-length treatment in two classic works (Getzels and Jackson, 1962) and (Wallach and Kogan, 1965).

Modern research continues to explore, synthesize, and evaluate the relation between creativity and intelligence (Kim, 2000; Preckel et al., 2006; Sligh et al., 2005 and Sternberg and O’Hara, 1999). Dollinger (2003) found that greater need for cognition was associated with higher scores on the Creative Behavior Inventory.
Creativity is generally measured by creative output, depending on the assumption that “those with higher creative potential have higher creative output...[or] mastery of the discipline...[relying] on the observation that creativity tends to be domain-specific—that is, most highly creative people are creative only within a single discipline.” (Smith and Paradice et al., 2000) Creativity is defined as something different from intelligence, (Michalko, 1998). “Creativity is often defined as a parallel construct to intelligence, but it differs from intelligence in that it is not restricted to cognitive or intellectual functioning or behavior. Instead, it is concerned with a complex mix of motivational conditions, personality factors, environmental conditions, chance factors, and even products.” Wu and Chiou (2008) found that dialectical and relativistic thinking were positively correlated with creative performance, whereas formal thinking was negatively correlated. Planned contrasts revealed that post-formal thinkers scored higher than formal thinkers in all dimensions of creativity. According to Ferrando et al., (2005) there is a greater relationship between creativity and multiple intelligences, but from the multidimensional perspective, the threshold theory is corroborated for visual-spatial, naturalist and linguistic intelligence. Silvia (2008) found Divergent Thinking to be substantially related to a higher-order intelligence factor.

The wide range of results regarding the relationship between creativity and intelligence makes it difficult to understand the nature of the relationship between the concepts, the threshold theory according to which up to certain level there is positive correlation between creativity and intelligence (up to I.Q.120) and after that there is no correlation between the two variables. Moreover, the research indicate that intelligence is not an important predictor of creativity, considering this view the present research uses intelligence as a part of personality and not an independent, distinct variable.

2.3 CREATIVITY AND FIELD-DEPENDENT-INDEPENDENT COGNITIVE STYLES

Cognitive style is a hypothesized link between the impinging stimuli and the individual's responses to those stimuli. Cognitive style is usually described as a
stable and persistent personality dimension which influences attitudes, values, and social interaction. Witkin et al. (1981) considers cognitive style as a form of mental meaning that a person adopts to filter and process the stimulations when he is faced with a complicated environment. Messick (1976) considers cognitive style a psychological term which refers to variations among individuals, is a preferred way of perceiving, organizing, or recalling information and experience. He also says that cognitive styles are also viewed as the typical means of problem-solving, perceiving and remembering. With reference to the discussion in the previous section it can be conceived that there is relationship between types of creativity and field-dependent-independent cognitive style and there are differences in field-dependent-independent cognitive style on high versus low creativity.

Not much research has been done relating to field-dependent independent cognitive styles and creativity (Crutchfield et. al., 1958; Mackinnon, 1962; Wallach and Kogan, 1965; Bloomberg, 1967). Witkin et al. (1962) found positive association between field-independence and creativity. Many subsequent studies, however, have attempted to relate field-independence to creative ability directly (Spotts and Mackler, 1967) or through some intervening variables such as dogmatism (Ohnamacht and McMooris, 1971) and fixity-mobility (Bloomberg, 1967). Pektas (2008) found that cognitive styles (imager students) are positively correlated with drafting and creativity scores. In another study conducted by Stoyanov & Kirschner (2007) on two groups 1. free-association with a direct reference to the problem, called shortly direct, and 2. free-association with a remote and postponed reference to the problem, called remote, on fluency and originality of ideas in solving ill-structured problems found no significant difference between innovators and adaptors in both direct and remote groups and also there was no statistical indication for an interaction effect between treatment and cognitive style. Crossland et al. (2000) found significant relationships for both field-dependence and need-for cognition. A study conducted by Tsakanikos (2006) revealed that analytic perceptual style (field-dependence) was associated with better performance on associative learning, and that this relationship was retained after controlling for differences in intelligence, age and gender. Danili and Reid (2005) found that cognitive styles field-dependent
independent are correlated with pupils’ performance on all the tests, and in almost all the formats of assessment. Results of a study conducted by Hecht and Reiner (2007), indicated field independents are higher in presence (sense of presence depends on both technological feldity and the user cognitive characteristics) ratings than field dependents. Minhas and Kaur (1983) indicated a positive association between embedded figures test and figural indices of creativity. It has been found that several cognitive styles are correlated to the aspects of creativity (Martinsen, 2011). Findings of a study conducted by Meneely & Portillo (2005) showed that participants showing flexibility between cerebral, limbic, right, and left modes of thinking had significantly higher mean scores on creative personality than did those who revealed a more entrenched cognitive style. Saracho (1999) in a factor analytic study on preschool children disclosed that field-dependent children participated more in social play activities, whereas field-independent children were interested more in non-social play activities. Similarly in a study of 80 subjects Yan (2010) found that field dependent subjects were more sensitive to social changes while making choices and cognitive styles affect the processes of choice motor responses which are most likely mediated through the perceptual channel rather than motor levels. No significant correlation was found when investigation was done with Swedish national male handball players using Rod-and-Frame Test but scores were correlated with their field-goal shooting attempts and shooting efficiency (Apitzsch, 1997). Saracho (1991) in study school going children observed challenging results for the theory of field-dependence-independence as more field-independent children were not able to play a role and solve a problem. Moreover, the social competence of children suggested that teachers perceived the more field-dependent children as more socially competent and also perceived field-dependent pairs of children where one child was accepted and the other was rejected as more socially competent. Both field-independent and field-dependent children who were rejected as playmates by other children were found to came into a social play. And field-dependent children entered into number of plays where field-independent children were interested in more physical and manipulative play.
While some studies as given above reported positive association between field-independence and creativity, others yielded essentially inconclusive results (e.g., Bieri et al., 1958; Rouse, 1963). Bloomberg (1967) investigated the issue of the relationship between field independence and creativity in depth and found that the creative can not be easily categorized as field-dependents or field-independents and that they may partake of attributes of either or both of the cognitive styles. The creative can be either field-dependent or field-independent and that all field-independent might not be creative. Conversely, noncreative individuals would be just as likely to be field-independents as field-dependents. Conducting an intensive study with sixty paid volunteers, he failed to find any linear relationship between field-independence and creativity. It was found by Altum and Cakan (2006) that there was no significant relationship between cognitive styles and academic achievement, and also found that students’ attitudes toward computers are not associated with field dependency, even when their achievement levels were controlled. Attitude toward computers is found to function independently from cognitive styles. Having reviewed the research related to relationship between creativity and field-dependence-independence, it can be conceptualized that inconclusive and/no relationship between the two concepts is due only to the fact that researchers have considered creativity as one-dimensional. Considering the dichotomies of both the variables a relationship between them can be hypothesized i.e., field-dependence and meaning type of creativity will be positively correlated and novelty type of creativity and field-independence will positively correlate.